ENGINEERING NEWS-RECORD

SEVENTY-SIXTH YEAR OF PUBLICATION

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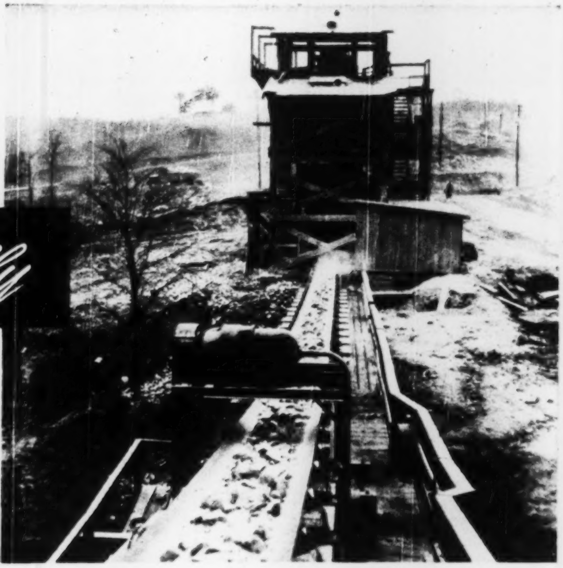
★ BOMBS VS. BUILDINGS ★

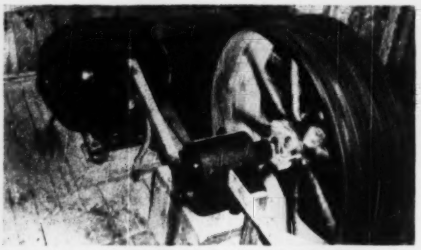
A McGRAW-HILL PUBLICATION

turning granite into sand . . .

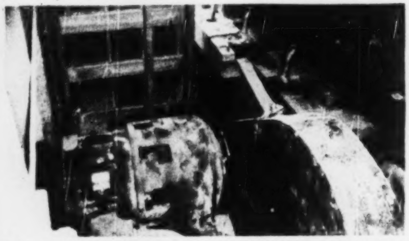
. . . Electrically



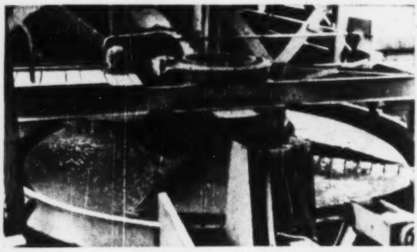
Rock coming from secondary crusher is carried on conveyor driven by a 50-hp G-E gear-motor



Crushed rock is reduced to sand in Marcy rod mill made by The Mine & Smelter Supply Co., Denver, Colo. Drive is a 350-hp G-E synchronous motor



50-hp G-E motor powers conveyor belt hauling material to hopper at top of cement mill



Dorr classifier, for washing sand clean and removing dirt and fines, is powered by a 3-hp G-E gear-motor

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ENGINEERING NEWS-RECORD

VOLUME 144 JANUARY 26, 1950 NO. 4

WALDO G. BOWMAN
Editor

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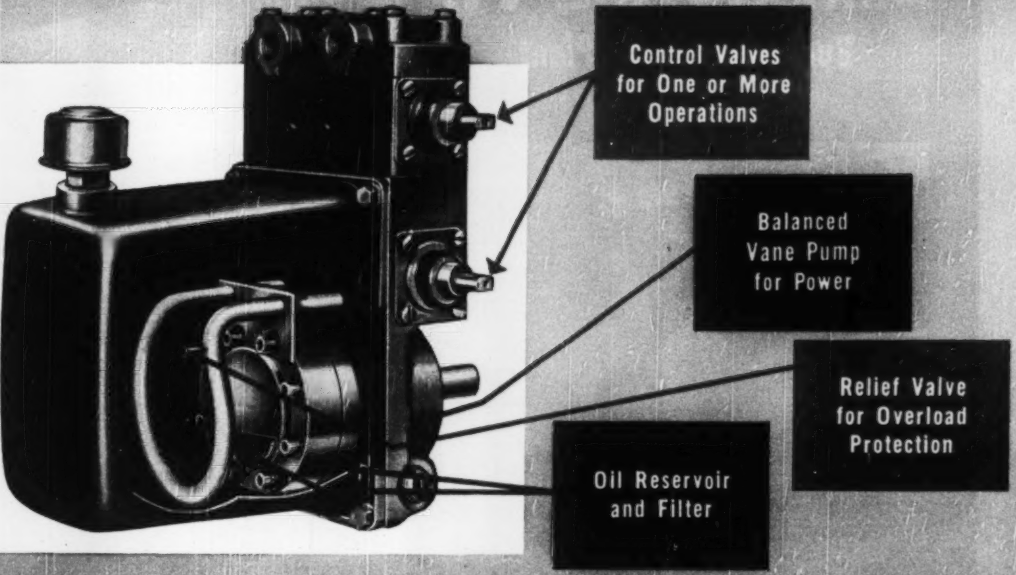
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46-48**

Vickers Hydraulic Power Pack is Saving Labor and Reducing Costs on Agricultural Implements, Construction Machinery, Materials Handling Equipment, and Industrial Machinery

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Burlington Filter Plant

(Addition completed in 1948)

WHITMAN & HOWARD
Engineers
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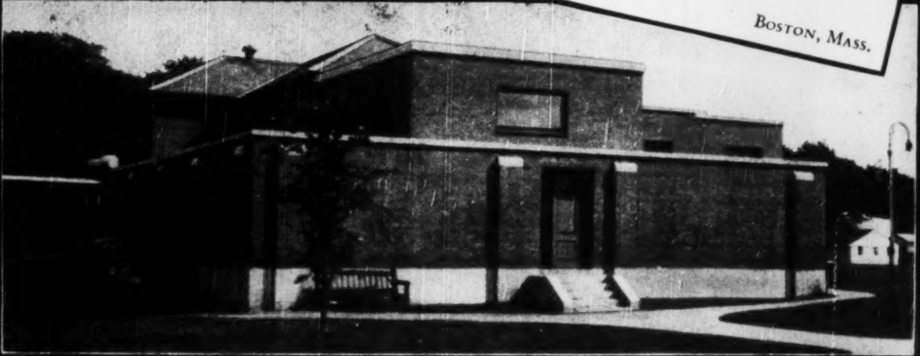
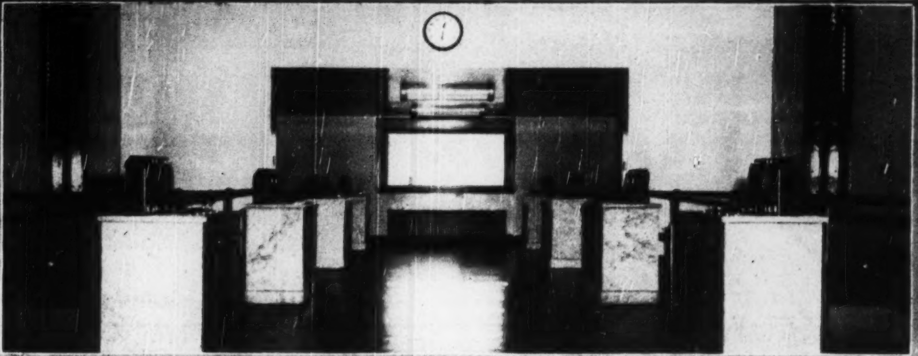
Boston, Mass.





This water filtration plant, with a steady record of service to the community of over forty years, has recently undergone a thorough "face lifting". By modernizing the facilities and adding new structures and mechanical equipment, the plant capacity has now been doubled. Westcott Construction Co. of North Attleboro, Mass., installed the Builders equipment which is used to meter, control, and record the water flows through the settling basins and filter beds. For bulletins describing Builders waterworks equipment, address Builders-Providence, Inc., (Division of Builders Iron Foundry), Providence 1, Rhode Island.

Builders waterworks equipment furnished for the addition to the Burlington Filter Plant:

Filter Operating Tables with Valve Operating Levers and Valve Position Indicators

Loss of Head Indicating and Rate of Flow Recording Gauges with Diaphragm Pendulum Actuators

8" Filter Effluent Rate Controllers

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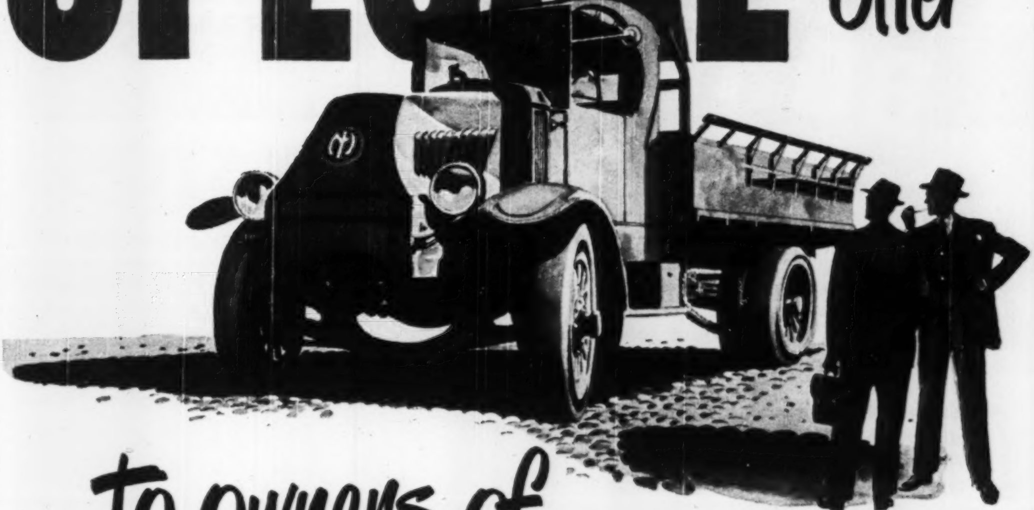

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THE CONSTRUCTION WEEK

HOUSING MONEY—A spokesman who usually expresses the administration viewpoint, Senator Sparkman—chairman of the Housing Subcommittee of the Senate Banking Committee—at a hearing last week advocated that interest rates for all government-insured mortgages be reduced to 4 percent. At present, that is the rate only for large rental housing projects. Administrative action by the Federal Housing Administration could lower to the suggested level the present 4½ percent interest charged on loans for sales housing—a potential shot in the arm for residential construction that makes up three-quarters of the present national volume.

HOUSING SNAG—Co-op housing—boosted by the administration in its attempts to aid the middle-income group (ENR Jan. 12, p. 17)—is hitting more trouble in the Senate than the White House looked for. Advertised as a means of getting housing for middle-incomes, the plan is looked upon by some senators as a means of getting government into the direct lending in the homebuilding field. Observers point out that the proposed National Mortgage Corp. would sell government-guaranteed obligations to private investors (such as insurance companies), and funds so raised would be loaned to co-op projects. Only difference between this and the U. S. Treasury raising money for direct loans is a matter of mechanics, according to opponents of the proposal.

ITS ONLY MONEY—What to do about Lustron may get to be an even hotter intra-administration dispute. The venture into enameled-steel prefab housing hasn't been able to get on its feet, even with $37.5 million of RFC backing—and now RFC doesn't want to invest any more, even if that means scrapping the effort. However, ardent housing advocates in the administration want to see the experiment pushed—they say the problem is only a matter of money, even hint that the government might operate the plant to be used for a yardstick on housing costs. Meanwhile, the government is preparing to take over Lustron's assets.

NEW RECLAMATION LAW?—Members of the National Reclamation Association are at home now, mulling over suggested revisions to the reclamation law brought out at a special meeting in Washington Jan. 16. Both the reclamation and budget bureaus were consulted on proposed changes, but association directors will have to approve any suggestions before the program is presented to Congress.

ACCOUNTING NOTE—North Carolina's Highway Commission, target of charges that it was usurping the business of private contractors last summer (ENR Aug. 25, p. 10), released figures on its business for 1949. They were: Work done by state forces, $17,386,320; work done by private contract, $28,707,542.

MORE ON ST. LAWRENCE—The Federal Power Commission will pass on the decision of an examiner who recommended against New York State's bid to develop St. Lawrence power. Exceptions to the examiner's decision (he held that the federal government, not the state or private interests, should develop the river) were filed by the state, the National St. Lawrence Conference, and the Aluminum Co. of America (which operates its Massena, N. Y., plant with St. Lawrence power).

TAX SAVING HELPS SALES—Contractors trying to sell repair jobs to industries and business houses should remind owners of a money-saving fact: Work that does not increase the capital assets can be charged as cost deductible from income, thus reducing actual cash outlay by as much as 38 percent. A repair job costing as much as 35 percent of the original investment has been held by the courts to be a deductible expense. The test is whether the work constitutes merely a restoration to permit continued use of the structure—not replacement of a good facility by a better one. But tax law being as involved as it is, it remains a good idea to see your attorney before deciding whether a charge is or is not deductible.

HIGHWAY NEEDS: $41 BILLION—Money requirements for roads and streets—to raise these facilities to the level of present traffic demands—total $41 billion, according to the Report on Highway Needs of the Congressional Joint Economic Committee, headed by Senator O'Mahoney. The report adds little to information previously available in various places. Its main service is in pulling all the data together in one package.

TEXAS POWER DAMS—The Brazos River Conservation and Reclamation District, a Texas state agency, has told the Federal Power Commission it wants to build and operate three small hydroelectric stations on the Brazos in Palo Pinto and Hood counties, west of Ft. Worth. The three plants add up to 90,000-kva. total capacity. FPC has to rule on the "navigability" of the river at the three upstream points.

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CONSTRUCTION TRENDS

How Industry's 1950 Plans for Capital Expenditures Compare With 1949

	1950 Planned Expenditures (Millions of Dollars)	Percent Change from Actual 1949 Expenditures
Chemicals	$1,040	— 5%
Petroleum Refining	580	—17
Food	585	— 3
Machinery	460	—13
Steel	445	—14
Autos	550	+31
Textiles	360	—12
Electrical Machinery	135	—32
Transportation Equipment	95	—34
Other Manufacturing	2,050	—20
Total Manufacturing	**6,300**	**—13**
Railroads	735	—44
Electric Utilities	2,180	— 2
Gas Utilities	870	— 7
Other Transportation and Communication	1,695	—10
Mining	620	—17
All Industry	**$12,400**	**—13**

Industry is now planning to invest $12.4 billion in new plants and equipment in 1950.

These are the current plans of American industry—as represented by manufacturing, mining, transportation, and utilities—to invest in new facilities in 1950. In the postwar years, surveys show, about 30% of these investment funds have gone for construction.

Under these plans, capital expenditures this year will be about 13% less than in 1949. The survey suggests, however, that decline in capital expenditures which began late in 1948 may be over.

These are highlights from McGraw-Hill's third annual survey of business plans for new plants and equipment. Conducted by the McGraw-Hill Department of Economics, the survey summarizes the investment plans of leading companies across the country. Companies covered in the survey were selected to give an accurate cross-section of all industry. Investment plans for these companies are projected, on the basis of their employment compared to total employment in each industry, to estimate total capital expenditures.

Other key points brought out by the survey are:

(1) Manufacturing industries alone plan to spend $6.3 billion in 1950, which is 13% less than they spent last year. The automobile industry plans to increase its capital program 31%. Plans for the chemical and food industries are off less than 5%. Other manufacturers plan to invest from 12% to 34% less.

(2) Non-manufacturing industries likewise plan to cut back capital expenditures by 13%. Electric utilities plan to spend within 2% of their 1949 total. But railroads plan to slash their programs 44%. Gas utilities, other transportation and communications industries, and mining will be down moderately.

As it is now, industry's capital expenditures in the first three months of 1950 are running about 15% under the average for 1949. That, in connection with the McGraw-Hill survey of plans for 1950 as a whole, suggests capital expenditures are likely to be stable.

The level, however, will be well below the point indicated by industry's needs for new plants and equipment, as shown in earlier McGraw-Hill surveys.

In reporting on the condition of their plants and equipment last year, manufacturers indicated to McGraw-Hill that it would take almost $20 billion to put their plants and equipment into first-class shape. In most cases, this involved making up for the years during the depression and war.

Manufacturers were able to spend only about $1.5 billion for this kind of modernization last year. And—as plans stand now—they will be able to use only about $.5 billion in this way next year. At that rate, it would take forty years to completely modernize the nation's manufacturing plants. The biggest part of manufacturers' 1950 investment funds, about $3.5 billion, will go to make up for depreciation—wear-and-tear on facilities—during the year. The rest, $2.2 billion, will go to expand production capacity. Under today's plans, that will expand the country's manufacturing plant about 3%—far less than the rate in the early postwar years when industry strove to catch demand.

The record of 1949 emphasizes that industry's investment plans can change rapidly as business changes.

Over-all actual capital expenditures for all industry in 1949 were one percent greater than the total of plans reported to McGraw-Hill a year ago. However some industries—notably electric utilities, food, paper, and non-ferrous metals—spent more than they had planned. Others, spent substantially less than they had planned.

What does all this mean for construction?

First—Industrial work may well level off late in 1950.

Second—Manufacturing industries, at least, will put much more emphasis on replacing and rebuilding existing facilities than on expansion, although expansion will still be at a healthy rate.

Third—Capital programs can change rapidly as general business changes. A marked upturn in prospects in any industry, for example, might well lead to a new program of construction. Markets for this kind of construction, in other words, can change rapidly, even though business as a whole is going along evenly.

Finally—even though capital programs will be lower than a year ago, they will still be at a high level.

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EDITORIALS

Engineers in World Affairs

ENGINEERS would benefit by many more talks like the one made at the ASCE annual meeting by Nelson A. Rockefeller on the role of engineers in world affairs. Mr. Rockefeller has had wide experience in trying to use American private-enterprise know-how to aid backward countries to help themselves. Some of it has been very costly, and his discussion of the subject was tempered by that fact. He painted no glowing picture of vast and immediate opportunities for American engineers and American capital. The going will be slow. Living standards in any country cannot be raised rapidly, and yet, as Mr. Rockefeller pointed out, it is only by the slow expansion of consumer demand that new and broader opportunities are to be created.

Engineers, he said, played an important part in the expanding national economy that made this country great. They can and probably will play a similar part in the expanding world economy that is so badly needed now. But that expansion can only come through freer world trade, and that means much larger purchases in this country of what the foreign nations we want to help have to sell. Only in that way can we get sufficient dollars into the hands of those whose requirements in this respect have previously been met by our purchase of their raw materials.

There is where the rub comes, and it is well that engineers realize it. They must do their best toward getting the public here to accept that hard fact if the expansion abroad is to take place within any reasonable time. Part of their job in world affairs is to learn to think—and talk—in terms of world economic expansion.

Less Fluorine: Better Teeth

THE PEOPLE of Britton, S. D.—who were conditioned to use a high-fluoride-content water and to see their children's teeth become mottled from it—are enjoying improved water. The improvement in quality is due to completion and operation of a fluoride-removal plant (ENR Jan. 19, p. 40)—the first of its type in this country.

Credit for this health-benefiting innovation is shared by two groups: The dental division of the U. S. Public Health Service and the city officials of Britton. The dental health group entered the picture to guide development of a feasible fluoride-removal process as well as to stimulate manufacture and assembly of suitable equipment that would do the job. The city officials agreed to pilot-plant experiments and operation on which the new plant was designed. The construction cost was shared equally.

Singled out for special mention should be F. J. Maier, sanitary engineer attached to the dental health division. Mr. Maier handled the initial investigations, ran the gauntlet of construction difficulties in supervising plant erection and suffered the headaches of initial operation to insure expected performance.

This project deserves to be followed intimately by consulting engineers and public-works officials who are faced with the problem of treating excessive fluoride-content water. Progress in this field has been hindered in the past by a lack of fundamental knowledge as well as scarcity of funds for research and development. Now a good start has been made. The Britton plant is, it is admitted, not the "last word" in fluoride removal. Changes are being made continuously in the processing to improve treatment as well as reduce cost of operation.

Already plans are underway by the USPHS for another fluoride-removal plant in Texas. As experience accumulates, there is the assurance that another milestone will be passed in the elimination of public-health hazards that originate in water.

Controlling Soil Compaction

SCIENTIFIC CONTROL of earth-dam construction needs to be tempered by recognition of the fact that laboratory results cannot always be duplicated in the field if costly delays are to be avoided. That conclusion was re-emphasized by the findings in one of the papers presented at the annual meeting of the Highway Research Board.

Thus, common practice in making the standard compaction tests in laboratories has been to re-use a single soil sample, compacting it at various water contents to determine the moisture-density relationship for a particular job. That practice was followed on a large earthfill project in the South on which the contractor ran into difficulties because he could not obtain the specified density in the field. As some soil authorities had long suspected that similar difficulties encountered on other jobs might be the result of reworking the same soil sample, the engineers who were consulted on this job repeated the laboratory tests using fresh samples of soil for each point on the curve. Results fell short of the specified amounts by as much as 4 lb. per cu. ft., which checked closely with densities obtained in the fill.

Further studies with other soils generally gave similar results. The cause, in the opinion of the men who made the tests, is that the re-used portion is subjected to greater total compactive effort, and possibly to better mixing of water and soil grains in the re-used sample, resulting in better compaction. But whatever the cause, it seems evident that this possibility must be taken into consideration in the standard compaction procedure or else the contractor must be given more leeway in meeting the compaction requirement set forth in the specifications.

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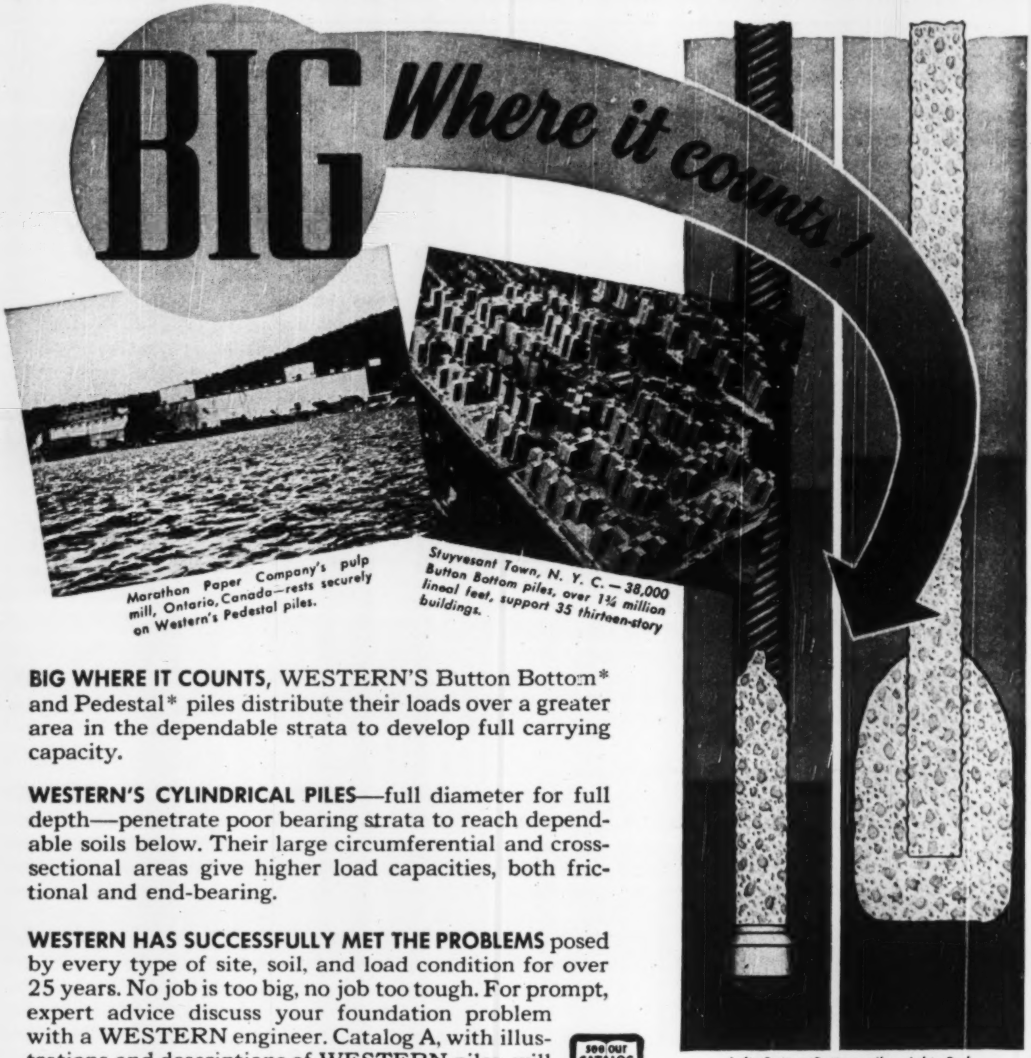

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ENGINEERING NEWS-RECORD

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ASCE told of engineers' world development role

Nelson Rockefeller, President Howard note engineers' part in programs—Almost 75 papers, committee reports presented to technical divisions at 97th meeting

Focal point of general interest at the 97th annual meeting of the American Society of Civil Engineers in New York last week was the role that U. S. engineers must play in any programs aiding under-developed countries.

That role was spelled out by Nelson A. Rockefeller, president, International Basic Economy Corp.; by E. E. Howard, consulting engineer of Kansas City and the new president of the society, and it was referred to repeatedly during the discussions of the United Nations headquarters building by top officials of the project—Byron Price, of the U. N. Planning Commission, Wallace K. Harrison, architect, and Lou Crandall, head of the associated contractors on the work.

Specialist interests of members attending the meeting were satisfied in meetings of the technical divisions at which a total of nearly 75 papers and committee reports were presented.

Need expanding world economy

Pointing to America's great new responsibilities as the dominant creditor nation of the world, Mr. Rockefeller said that these could only be discharged by moving our concept of an expanding national economy as the motive force of civilization onto the international stage. The commanding role that the engineer played domestically will continue abroad.

Mr. Rockefeller emphasized the inadequacy of straight governmental aid and the necessity of private capital to bring about any appreciable progress in under-developed countries. It will be a long process that can only be advanced by freer world trade based on easy convertibility of currencies, in his opinion. While working to bring this about, America can shorten the time interval by establishing policies to increase its own imports of foreign goods, and thus put more dollars in the hands of the countries we are trying to help. A part of this policy, said Mr. Rockefeller, may well be temporary government aid to U. S. industries or regions whose livelihood may be threatened by these imports.

Mr. Howard, concentrating directly on the engineer's role in international affairs, urged that it be broadened to encompass policy making, basic planning, finance and administration. American industry, to its great advantage, has utilized engineers for these tasks at home, and can be expected to do likewise on foreign work. There is no reason why government should not follow a similar policy, said Mr. Howard. He recalled that President Truman had told the ASCE at the Washington meeting that he would like engineers in the State Department.

Board takes a hand

The society's Board of Direction, during its sessions prior to the meeting, furthered the cause of engineers as policy makers by restating its interest in seeing a sane and definite policy established with respect to the nation's water resources.

Two years ago, the ASCE was instrumental in establishing a committee on water policy by Engineers Joint Council. This committee has since worked to get a Congressional commission created to foster the necessary studies, and the board assured its representative on the EJC committee, W. W. Horner, of its continuing support for the soundness of this idea. At the same time it agreed in the EJC decision to render all possible aid to President Truman's new temporary Water Resources Policy Commission, including submission of briefs to the commission from time to time on phases of water policy that the engineering profession considers of paramount importance.

OK constitutional changes

Another action of the board included approval of several amendments to the proposed new constitution, which later were accepted by the business meeting of the society, at which time also it was voted to submit the constitution to a letter ballot from the entire membership for its ratification.

The board also gave its approval for the formation of a special corporation to handle the planning and administration in connection with the society's centennial celebration, to be held in Chicago in September, 1952. And it noted that during 1949 the membership of the society had gained 11.4

PRESIDENTIAL HANDSHAKE—Incoming ASCE President E. E. Howard, left, is greeted at 97th annual convention by retiring president, Dean Franklin Thomas, of University of California.

percent, to an all-time high of 26,720. Over a thousand more applications for membership were received than in any previous year. The majority of these came from recent engineering graduates, with the result that Juniors now constitute 36 percent of the entire membership.

Gratified by this trend and the infusion of new blood into the society, the board also called attention to the serious resulting effect on the society's finances. Juniors pay smaller dues.

Construction Division

Design and construction of United Nations Headquarters were the subjects of the Construction Division.

Byron Price, assistant to the Secretary-General, Headquarters Planning Commission, said that in the step-by-step process of narrowing down choice of site, Geneva had been eliminated because the existing League of Nations buildings were too small. Furthermore, the Swiss are not members of the UN, since their constitution forbids them to engage in international activities in which the use of force may be involved.

Buildings cost $65,000,000

To erect the buildings, Mr. Price said, the UN has borrowed $65,000,000 from the U. S., which it will pay back over a 30-year period, beginning in 1951. (The U. S. pays 40 percent of the regular UN budget.)

He called the headquarters buildings "an act of faith—built in the belief that they will be useful."

Wallace K. Harrison, director of planning, UN Headquarters, said that human beings were the design module for the buildings. Architects from all over the world participated in the design and they drew on many engineers for assistance. Even the ancient Egyptians were helpful: They contributed a trick for proportioning the narrow, 39-story Secretariat (ENR Dec. 29, p. 20). The plane of the marble end wall was pushed forward for optical effect, so that the structure would not appear top-heavy.

Replying to critics who claimed that the extensive window areas in the Secretariat are unnecessary, Mr. Harrison called attention to the skyscrapers being erected in New York City by speculative builders, who were specifying even more window area than the UN designers. The building was designed for beauty of proportion and simplicity, he said, it is not a monument, but a workshop for peace.

Lou Crandall, president of Fuller-Turner-Walsh-Slattery, Inc., the contractor for the Secretariat, said that the combination of four builders made available the best in experienced staff, manpower and management.

Cost cutting

A lively look at how to get more out of the public construction dollar led off the construction division's activities. Two contractor representatives tore into costly specifications for government jobs.

Contractor opinions were set forth by Ross White, vice-president of Brown & Root, Inc., Houston, Tex., and Francis Tompkins, chief engineer, Chas. A. Tompkins Co., Washington, D. C. Mr. Ross focused on concrete dams and Mr. Tompkins used buildings—and the specifications therefor—in their two-pronged, constructive criticism of public agency spending.

On the defensive, W. E. Reynolds, commissioner of the Public Buildings Administration, and Bruce Davis (representing Grant Bloodgood, chief construction engineer, U. S. Bureau of Reclamation) described efforts of their agencies toward cutting costs. Mr. Bloodgood's paper said USBR projects are designed to be repayable by water users, and on basinwide projects economies are sought in planning, research, design, contract administration and construction. The saving of $4,750,000 on Hungry Horse Dam through use of flyash pozzolanic material in concrete was cited as an example of USBR attention to costs.

Operating costs cut, too

Mr. Reynolds pointed to the $12.50 per sq. ft. cost of PBA's General Accounting Office in Washington, D. C., and used that 2,000,000-sq. ft. building in enumerating efforts to cut not only first costs, but operating costs of government buildings. Beltline operation on materials and assembly, modular coordination, lower dead load through lightweight materials and more attention to operation of the finished product were suggestions.

Discussion from the floor centered about J. R. Gilbert, chief of concrete control branch, civil works engineering division, Corps of Engineers, who said he "thought the shoe fit and wanted to put it on" in defense of Army specifications on concrete dams. He defended restrictions on use of conveyors, size of buckets, height of lifts, construction joint preparation, aggregate qualities, temperature variations and job inspection.

Mr. Tompkins, for the contractors, rebutted that cleanup costs to his company on construction joints of Buggs Island Dam exceeded in cost per-cu.-yd.-of-concrete-placed all other labor costs for concrete placing. He suggested 10-ft. lifts could halve this.

Hal W. Hunt, meeting moderator, referred to Canadian practice—pouring of 40 to 50-ft. lifts from conveyor belts without any refrigeration—and hinted more on this would be heard at next summer's meeting in Toronto.

Structural Division

Papers on earthquake-resistant design, bin pressures and torsion highlighted the sessions of the Structural Division.

"No one can predict an earthquake," Capt. Elliott B. Roberts, of the U. S. Coast and Geodetic Survey, told the division. Probability studies made by the USCGS fail to reveal any pattern of earthquake occurrence. Division of the country by the USCGS into four zones of expected damage, he said, is the result of past performances, but it's anybody's guess where the next 'quake will strike. He proposed that $1,000,000 be spent for research by state and federal governments.

Prof. George W. Housner, California Institute of Technology, called attention to the difficulty of specifying shears and bending moments for structures in earthquake zones. Discussers of these two papers unanimously held that engineers should always consider seismic forces in design. They callled for more thorough research, publication of data and development of safe, economical design procedures.

R. L. Moore, research structural engineer, and J. R. Shaw, The Aluminum Laboratories, Aluminum Company of America, reported on studies made on a shallow, rectangular bin to determine what pressures could be expected on the walls of railroad boxcars. They concluded that 60 percent of fluid pressure should be used for the design of structures subject to vibration.

Bruce G. Johnston, director, and Fu-Kuei Chang, research assistant, Fritz Engineering Laboratory, Lehigh University, presented test results for built-up girders subject to torsion. Prof. George Winter, head of the department of structural engineering, W. Lansing, instructor, and R. B. McCalley, graduate student, Cornell University, showed how design formulas were developed for light-gage steel channels, in which torsion occurs when loads are in the plane of the web. Such members must be braced at least at three sections, they reported.

Wave action discussed

Attention of the Hydraulics Division focused on wave actions and forces. Starting with the characteristics of the solitary wave and wave theories, the discussion went to engineering aspects

of wave action, in harbors and against breakwaters.

On the one-day program were M. A. Mason of the Beach Erosion Board, Asst. Prof. J. W. Daily, of M.I.T., John Carr from California Institute of Technology, J. W. Johnson from U. of C. at Berkeley, and R. Y. Hudson of the U. S. Waterways Experiment Station, Vicksburg, Miss.

Highway Division

Traffic problems and closely related matters were the chief subjects considered at the single session of the Highway Division. A plan for improving traffic conditions within New Orleans by eliminating all major railroad grade crossings and freeing streets of railway tracks was described by Kenneth King, traffic engineer of that city. A new union railway terminal is being built, with most of the approach tracks elevated above street grade. Work on several of the grade separation structures is under way and more will be under contract soon. Total cost will be around $40-million.

A major problem is scheduling the construction of separation structures so that the streets that must be closed for the work will not cause intolerable congestion at other points.

An impressive picture of what California is doing in the way of building freeways through and into major centers of population was presented by Fred Grumm, deputy state highway engineer. The state's freeway law was passed in 1939 and progress has been steady since the war. They now are in the fourth year of a highway building program that is expected to take from 15 to 20 years and to cost $1.6-billion to make up the deficiencies of the highway system.

O. K. Normann, chief of the section of traffic operations of the Bureau of Public Roads, reviewed the principles for determining highway capacity that have been developed through extensive research in recent years to replace the rule-of-thumb methods used in the past. These principles were summarized by Mr. Normann in the 75th Anniversary number of ENR Sept. 1, 1949, p. 194.

In his paper at the ASCE meeting, Mr. Normann laid special emphasis on the need for interrelating the several factors that affect the operating capacity of a highway in making design studies. In the past, he said, sight distances, curvature, grades and similar elements were fixed arbitrarily and money spent to attain them without any thought being given to whether other limiting conditions made them needless refinements at certain points of the highway.

The manner in which the principles described by Mr. Normann were being applied to current studies undertaken by the Automotive Safety Foundation were described by J. P. Buckley of that organization in a paper on long-range highway planning studies. Mr. Buckley centered his talk on the work they are doing now in Ohio.

Waterways Division

The Mississippi River Commission —led by its president, Brig. Gen. P. A. Feringa—moved in from Vicksburg to take over the waterways division sessions. Aided by municipal, industrial, consulting and Army engineers from "The Valley of the Giant," the commission representatives told a thorough flood control story.

As introduction and orientation the group showed its color sound film, entitled "The Valley of the Giant," after description of the Commission—its

HONORARY MEMBERS—ASCE's highest honor went to these members last week. Left to right and down: W. M. Wilson, University of Illinois; C. B. Breed, Massachusetts Institute of Technology; Theodore Von Karman, aerodynamicist; W. W. DeBerard, Chicago city engineer; and W. P. Creager, consultant.

organization and purpose—by General Feringa. The seven-member group has jurisdiction over the river basin from Cairo, Ill. to the Gulf, an area of 20,000,000 acres. To control a design flood of 3,000,000 cfs., below the Arkansas River (2,450,000 cfs. above) the commission has 1,581 miles of levees 73 percent completed. Reservoirs, 15 cutoffs, bank revetment and overbank floodways complete the control system.

Levee work explained

Charles Senour, chief engineer of the commission, went into details of the 1,220 miles of levees completed so far, describing their dimensions, materials and construction method. Moisture content of material most readily available makes complete compaction difficult, semi-compaction most practical.

Draglines and tower hoists do the placing. Sand boils back of the levees—and how to treat them—were also discussed.

Morganza Floodway will be in operation by fall of 1953, and its cost will total $20,000,000 according to B. F. Marx, commission engineer. Bids will be asked in March on pile foundation of the control structure's gate section; there will be 125 gates, each 31 ft. 3 in. wide. In May the superstructure will be advertised, to be completed by 1952.

With a serious flood threat reportedly being thwarted even as they spoke, two commission engineers dealt with past floods and flood predicting: E. J. Williams, Jr., told of extent of flood records that went into development of the design flood. R. E. King discussed forecasting techniques, saying that three floods had to be predicted: maximum, probable and individual.

Only the magnitude and duration of the maximum flood must be known; magnitude, duration and frequency must be known of the probable flood; in the case of individual floods, magnitude, duration and expected time must be foretold.

Mississippi's change described

The lower Mississippi was not always a flood threat. H. N. Fisk, research geologist of Humble Oil and Refining Co., Houston, Tex., told the meeting that the river flows on alluvial deposits up to 100 ft. thick in the 600 miles below Cairo. It once flowed in deeply eroded valleys. But as ice-age glaciers melted, the seal level rose, decreasing the Mississippi's gradient and carrying power. Now, sands and gravel underly a thick blanket. The clay, being impervious, hinders migration of the stream, so it has been stabilizing since the sea reached its present level 5,000 years ago, and now seems quite poised, said Mr. Fisk.

Concerning navigation and commerce on the river Austin B. Smith, principal engineer of the commission, traced river engineering history. Harbor improvements at Memphis and Baton Rouge were detailed by William B. Fowler, city engineer of Memphis, and Leo M. Odom, Baton Rouge consultant.

Algiers lock at New Orleans was described by Col. G. H. Hudson, chief of the New Orleans District's engineering division, Corps of Engineers. C. P. Lindner, chief engineer of the South Atlantic Division discussed diversions—their design and effect on upstream and downstream slope, stage, storage and erosion.

Sanitary Division

Safe or unsafe bathing beaches cannot be distinguished because it is not possible to measure the intrinsic qualities of swimming waters. The present state of knowledge as well as technical procedures do not permit development of the precise quantitative values needed for this appraisal, C. R. Cox told the Sanitary Division in one of a series of papers. Mr. Cox is chief of the water supply section of the New York State Department of Health.

"Under these circumstances," he said, "precise bacteriological standards cannot be developed, and all available information must be considered in the light of properly organized and conducted sanitary surveys of each beach."

General administrative guides concerning swimming water quality "may be fruitful in encouraging uniformity of practice." But they should be utilized only for administrative purposes and they ought not to be advanced as precise governmental requirements, Mr. Cox cautioned.

Isotopes trace mixing reactions

Radioactive isotopes are superior to salts and dyes for measuring horizontal mixing in various water and sewage treatment processes.

Based on results of tests made at Harvard University, H. A. Thomas, Jr. and R. S. Archibald, research fellows, said that another advantage is the fact that radioisotopes can be detected in extremely small quantities. A clear signal (100-1,000 radiations per min.) can be obtained from samples containing as little as 10^{-10} or 10^{-11} milligrams per liter. In one test on a 18.3-acre-ft. (5-ft. depth) only mg. of a solution containing 2×10^{-6} gram of radioiodine were used. These low concentrations do not cause observable density currents that might disturb flow patterns, the investigators reported.

Presence of radioisotopes can be easily identified by many types of modern Geiger counters that give precise results. Radioisotopes from natural sources may occasionally be detected in water, they said, but these elements —normally found in very small amounts—do not interfere with the tracer.

Passage of tracer "clouds" in small flow systems, they reported, can be detected by radiation through conduit walls, a fact that eliminates the necessity of sampling the flow.

Other advantages of radioisotopes are: No chemical or biochemical reaction occurring in the flow interferes with rate of disintegration of the isotope; temperature changes have no effect; and absorption of the tracer on solid surfaces can be negligible by proper choice of isotope.

Great care is required in the laboratory, the investigators emphasized, to protect personnel from overexposure, which may result in cancer, genetic effects and other body damage.

The guard against radiation must be continual. Precautions include blood tests, wearing of instruments that record amount of radiation received and constant care in handling radioactive solutions.

Power Division

Conclusions drawn from the study of a large number of underground hydro electric power plants were outlined by Joseph D. Lewin, engineer with the Board of Water Supply, New York. Over 60 such plants have been built, with a combined capacity of more than 7,000,000 hp., mostly in Europe.

Principal advantages as summarized by Mr. Lewin are: (1) shorter distance through which the water is handled, thus reducing friction losses; (2) much less trouble with ice in cold climates; (3) elimination of expensive penstocks; (4) savings of 10 to 30 percent in the cost of powerhouses; (5) considerably less maintenance. To demonstrate this, he presented comparative cost figures for an unnamed plant in this country built in the conventional way and an estimate of the cost of a plant with a lined intake shaft, power plant and tailrace all in rock. He placed the saving for this type of plant at 42 percent of the cost of the conventional plant.

A discussion of Mr. Lewin's paper by G. Westerberg, director of the state power board of Sweden, was presented by Gail Hathaway. Mr. Westerberg said that reduction in maintenance is a major factor in decisions leading to the construction of underground plants. However, he questioned Mr. Lewin's statement that it was cheaper to build the machine halls underground than above ground.

Comparisons of our rock-excavating methods with Swedish methods is not practical, according to A. K. Alin, U. S. Engineers' Office, Omaha. Swedish rock men work in teams on an incentive system. Also, they are true artisans, studying each job as they go and adjusting their drill pattern and depths to the rock as they advance the heading.

Water for steam stations

A second session of the Power Division was given over to consideration of papers on hydraulic problems at steam stations, chiefly in handling cooling water for condensers.

Methods used at the Sunbury plant of the Pennsylvania Power and Light Co. were reviewed by Charles B. Sieb, hydraulic engineer of that company.

In a more general discussion of condenser water supply, A. W. Reid, hydraulic engineer of Gilbert Associates, Reading, Pa., stressed the importance of proper study of the flow records of a stream from which cooling water is to be taken to insure an adequate supply even in dry periods. Also, he emphasized, the importance of building intake structures, both on rivers and lakes, so that they do not alter the flow conditions and become traps for silt or sand.

Mr. G. Salzman, of Ebasco Services, took a somewhat different view of the water question, quoting one of their mechanical engineers as saying that they could build steam stations almost anywhere by the use of cooling towers.

W. L. Chadwick, of the Southern California Edison Co., stated that reclaimed effluent from sewage disposal plants was a source of supply that had possibilities in regions where water is scarce.

A brief historical review of dam building since ancient times was presented by R. A. Sutherland, hydraulic engineer, Ebasco Services. Included with the paper was a tabulation of all dams over 100 ft. in height, which is an amplification of a similar table prepared by Mr. Sutherland and published in ENGINEERING NEWS-RECORD Dec. 10, 1936, p. 807.

Surveying Division

City maps and city planning were discussed before the Surveying and Mapping Division Friday morning, in papers by Charles A. Blessing, and Henry H. Kranz. Mr. Blessing is director, planning division, Chicago Plan Commission, and Mr. Kranz is city engineer of Cincinnati.

Under the title, "Survey and Map Requirements for Modern City Planning," Mr. Blessing cited ASCE's manual "Technical Procedure for City Surveys" as a milestone in the field, and he called for a supplemental manual that would bring city planners up to date on aerial mapping techniques that now make the city mapper's task less difficult and expensive.

Mr. Kranz reported the experience of his city in getting an effective mapping program under way. Cincinnati and Hamilton County are sponsoring, jointly, a seven-year project that will yield 610 one-inch to 200-ft., topographic map sheets, covering the whole county. They got the ball rolling by inviting the U. S. Coast and Geodetic Survey to help establish a control triangulation and level system. The government supplied equipment and key men; the local agencies supplied other men, equipment and maintenance and supplies, at a cost of $32,091.

All other work is being done with local money. This work includes traverse and level fill-in for aerial-map checking and control, and for monument establishment, as well as contract for aerial mapping. Cost per map sheet is estimated at $1,733.

These two papers were discussed by Harold M. Lewis, Harry W. Alexander, L. T. Eliel and Ford Bartlett. Mr. Lewis, New York consulting engineer, said that a comparison of New York's old U. S. G. S. maps with today's aerial maps of New York clearly demonstrates superiority in the latter. The city planner, he said, is glad to have any type of photogrammetric product for his work.

Mr. Alexander, of Harland Bartholomew Associates, echoed Mr. Blessing's plea for standardization of use-classifications. "Map information should be kept up to date—not too expensive when photogrammetric resurveys are made," he added.

Caution on map scales

Mr. Eliel, of Fairchild Aerial Surveys, Inc., Los Angeles, cautioned the group on the choice of scales, which he termed a misunderstood subject. Scales should be a function of various factors: Scalability, working space and filing facilities. Scalability is influenced by the order of position-measurability desired on the map and by the limits of physical measurement on the map. Working space is explained as the amount of map space that must be available for inscriptions. "Filing facilities" refers to the size of files into which maps are to be put; if a map covering five miles width is to be put in a drawer 36 in. wide, the scale desired would have to be 1 in. equals 800 ft.

The percent utility of larger scale should be balanced against the percent of cost increase. It may be that the larger scale would be needed only a few times a year, in a small area on the map. Probably a cheaper, smaller-scale aerial map should be made, and the spot data obtained by ground-survey methods. Accuracies as well as scales should be specified by cities buying aerial maps. Where low accuracy is desired, a small-scale map can be made and enlarged. By investigating map economies along the lines suggested, cities may be able to get what they want at surprisingly low cost—sometimes less than $50 per square mile.

Mr. Bartlett, president of Lockwood, Kessler and Bartlett, Brooklyn, gave examples of cities' savings resulting from possession of air maps. One city saved four times the mapping cost on one sewer project that was redesigned on the basis of data from a new aerial map.

In addition to the four scheduled discussers, G. Brooks Earnest, director of the Cleveland survey, spoke. He commented that Cleveland's sister city, Cincinnati, is doing a relatively fast job. He went on to say that the Cleveland survey, started in 1937, is almost complete.

Soil Mechanics Division

Three papers on soil compaction drew a large crowd to the opening session of the Soil Mechanics Division. Consideration of the subject was opened by W. J. Turnbull, chief of the soils division at the Waterways Experiment Station at Vicksburg, who reviewed studies made there to correlate laboratory and field determination of soil strength and compaction. The studies described were made with a lean silty clay and a clayey sand.

Average maximum shear strengths (triaxial compression) developed by the silty clay were approximately equal for the 500-psi. sheepsfoot roller and the 20,000-lb. wheel-load rubber-tired roller, and were only slightly less than the strengths developed in the laboratory samples under dynamic compaction for equal water content and density.

The unconfined compressive strengths of the clayey sand developed under the crawler tractor were about equal to those produced by the sheepsfoot roller. Unlike the sandy clay, these strengths were appreciably greater than those obtained by dynamic compaction in the laboratory when compared on an equal-density basis at field and modified AASHO optimum moistures. Using these results as a basis for comparison, field strengths developed by the sheepsfoot rollers were somewhat greater than for rubber-tired rollers.

Portable testing apparatus

A miniature compaction device developed in the soils laboratory at Harvard was described by Stanley D. Wilson, assistant professor of soil mechanics at that school. It is designed to duplicate the kneading action under sheepsfoot rollers. Due to the small sample used for the tests, this device can only be employed for soils containing no grains which are larger than ⅛ in.

In tests made to date, laboratory results have checked field determinations much more consistently than have results obtained by standard methods. Also much smaller samples are required and the tests can be made in a fraction of the time taken for standard tests. For example, Prof. Wilson said he had obtained six moisture-density curves in four hours, or about the time that is required to obtain one curve by standard procedures.

J. L. McRae of Soil Testing Services, Inc., Chicago, reported on studies being made there of vertical stresses and pore pressure developed in a silty clay during compaction in the hope of determining the basic variables that affect soil compactions. Results are still too tentative for definite conclusions to be drawn, but there are indications that at least some plastic soils, when compacted at low water content, have reached a very stable condition when they develop no pore pressure or negative pore pressure during compaction. He believes that the most promising field to explore is that of the physico-chemical properties of soils used in building fills and dams.

Unwatering foundations

Formulas and graphs for determining the pumping capacity required to lower the groundwater adjoining the excavation for a foundation were given at the second session on soil mechanics by Stuart B. Avery, Jr., consulting engineer, Cambridge, Mass. Formulas for both single and double rings were developed, but Mr. Avery observed that they need simplification. They give results with a possible error of 10 to 15 percent.

Prevention of slides

Only the results of tests made on plastic clays at normal water content and density will give accurate measure of shearing strength, according to Louis Berger, associate professor of civil engineering at Pennsylvania State College. This conclusion was drawn from a study of 15 slides at which laboratory tests had been made on the foundation soils before the slides occurred. Also, Prof. Berger said, the average of strength tests on these soils gives too high a value. To insure stability, the minimum figures must be used.

City Planning Division

The city planning division, in its meeting Friday afternoon, followed no particular theme. Three subjects were covered in as many papers, the first being "Application of Social and Economic Facts in City Planning," by Howard Whipple Green, director, Real Property Inventory of Metropolitan Cleveland. Mr. Whipple described how his city uses government census figures to develop various information for planning. The figures are the bases of population, etc., density maps that show trends of land use by population.

How Chicago is establishing an express highway system was described by Hugo J. Stark, assistant chief engineer, Cook County Highway Department, Chicago. As a start on a program whose first stage will cost $375,000,000, the city will have $25,000,000 worth of work complete or under way this year. First-phase work will be complete in 1957.

In discussing practical aspects of transportation planning in large metropolitan areas, Leslie Williams, consultant, traffic and transportation planning, New York, asserted that the second half of the twentieth century has no time for piecemeal planning—that comprehensive planning should prevail.

Leading off the discussion of papers, Richard E. Dougherty, past president, ASCE, said that it is necessary to take a hard look at the dollar side of every plan, comprehensive or otherwise. He is familiar with the plans of many cities—most of the plans are financial monstrosities.

Gilmore D. Clarke and Frank H. Malley, respectively a New York consultant, and director of planning, Providence, R. I., also discussed the city planning papers.

Court ok's contract officer decision

The Supreme Court's refusal, early this month, to grant a contractor's claim to extra compensation for disputed work on a government project reemphasized the binding effect and finality of decisions made by the contracting officer—under the form of contract that has been standard for many years. The decision lends added importance to the changes in the standard government contract that may be recommended to Administrator Jess Larson of the General Services Administration by an advisory committee he has named. The committee represents ASCE, ASME, AIA, AGC and like organizations in the construction field.

By its action, the Supreme Court reversed a prior decision of the Federal Court of Claims. The Claims Court, earlier, had overturned the prior decision of the contracting officer and had entered a money judgment for the contractor.

The issue arose out of a 1942 contract with the War Department by J. W. Moorman & Son, Muskogee, Okla., to grade the site of an Oklahoma City aircraft assembly plant. A taxiway was shown on the drawings but was not located on the plant site as described in the specifications. The Moorman firm asked extra compensation for grading the taxiway—84 cents per cu. yd. instead of the 24 cents per cu. yd. which had been specified in the contract.

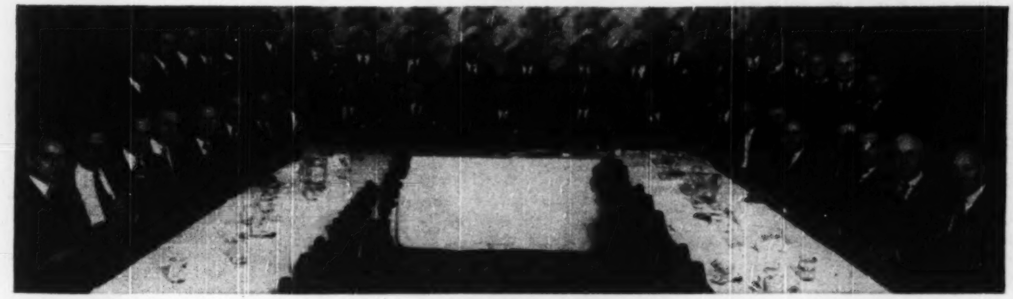
Upon investigation, the contracting officer rejected the claim, and his findings were sustained by the Secretary of War, to whom the contractor made an appeal. According to the specifications, the decision was "final and binding" with respect to the contractor's claims respecting work "outside the requirements of his contract."

Moorman then brought action in the Court of Claims, contending that a provision in the contract overruled the clause in the specifications. The contract provided that a department head's decisions are final only when disputes are over "questions of fact." Moorman argued that the dispute was over "interpretations" of the contract—a question of law, and not of fact.

This argument carried weight with the Court of Claims, but it was knocked down by the Supreme Court, to which the government carried the case. The Supreme Court held that contracting parties may agree in the contract to the binding effect of administrative decisions, as has long been done in standard government contracts.

The Moorman contract, the court held, plainly expressed the finality of such decisions, both on questions of fact and on questions of interpretation as to whether work was outside contract requirements.

What contractors want now is a form of contract that will allow administrative decisions by the contracting officer to prevent delay in the progress of the work—but not preclude the right of the contractor to appeal to the courts for added compensation when he is of the opinion that he deserves it.



HISTORIC OCCASION—For the first time in its short history, the National Water Pollution Control Advisory Board moves outside Washington, D. C. to hold a joint meeting with the Ohio River Valley Water Sanitation Commission, at Cincinnati, O. Joseph L. Quinn, Jr., Ohio commission chairman, is seated at center, as host to the visiting party. At his left is Thomas A. Berrigan, chairman of the Merrimack (Mass.) Valley Joint Sewage Board and acting chairman of the national board.

State Engineer Hyatt of California retires

Edward Hyatt, California state engineer and chief of the Division of Water Resources, will retire Feb. 1 after more than 35 years of service. He will be succeeded by A. D. Edmonston, assistant state engineer since 1945.

A civil engineering graduate of Stanford University, Mr. Hyatt began his engineering career with the U. S. Geological Survey, mapping the desert regions and Sierra, under the direction of the late Col. Robert B. Marshall, who conceived the plan which eventually became the Central Valley Project.

Joined highway commission

In 1914 he went to work for the state as an engineer for the California Highway Commission, and two years later he was transferred to the newly-formed state Water Commission, which later became the Division of Water Resources. In 1922 he was made deputy chief of the division, and in 1924 he became its chief. He was appointed state engineer in 1927. At present he is serving ex officio as chairman and member of the state Irrigation Board; as a member of the California Districts Securities Commission, the state Soil Conservation Commission, and the Water Pollution Control Board; executive officer of the Water Project Authority of California; and engineer and secretary of the State Water Resources Board.

Twenty-five years service

Following his graduation from Stanford University in 1910 with a degree in civil engineering, Mr. Edmonston spent 14 years in charge of location, design, and construction of various irrigation, hydroelectric, and municipal water projects in California. He entered state service in 1924 as hydraulic engineer in charge of investigations and preparation of reports and became assistant state engineer five years ago.

Ohio River group to check industries

The Ohio River Valley Water Sanitation Commission wonders how industries discharging wastes into its streams are making out under its program—and it's taking steps to find out.

These industries will be asked to send representatives to a series of conferences. The first of them soon to be announced, these conferences, by industry groups, will aim at reports on progress in treatment-facility installations and at clarification of any responsibilities that may now be confused.

"More than a year has elapsed since all industrial plants in the valley listed by state authorities were advised that an interstate agreement on pollution-abatement is in operation," said Commission Chairman Joseph L. Quinn, Jr. "Now we want to determine what has been done in this period as well as hear from industry groups how the commission can expedite progress in the control of certain waste discharges."

The commission has decided, in addition, to support federal legislation to provide tax relief for industries which undertake construction of waste-treatment facilities (ENR Dec. 8, 1949, p. 27). This decision was communicated to the National Water Pollution Control Advisory Board, which met with the commission. One of the board's spokesmen, James W. Follin, assistant administrator of the General Services Authority, expressed the opinion that prospects for federal grants to communities for sewage works construction are "meager."

The commission also asked the federal government bear the cost of facilities for regulating the discharge of water from Ohio's Mahoning-Grand River Floodway (ENR Jan. 19, p. 34). It was made clear that this is not a commission policy affecting every such project, but is applicable only to the Mahoning-Grand River project. The commission refused blanket endorsement for comparable projects, and asserted each would be judged alone.

◆

Rehearing set by FPC on disputed projects

Rehearing of the Federal Power Commission's licensing of the Pacific Gas and Electric Co. to develop power on the Kings River, California, will begin March 20 at Washington, FPC announced recently.

FPC permitted Interior Secretary Oscar L. Chapman to intervene in the proceedings and granted his application for a rehearing. The rehearing will also cover FPC issuance of a preliminary permit to the Fresno Irrigation District for investigation of power being built by the Army Engineers development at the Pine Flat Dam, also on the Kings River (ENR Nov. 19, p. 90).

◆

Montana road engineers to get higher salaries

The Montana State Board of Examiners has approved a new wage and personnel classification schedule for state highway department employees.

Engineers will now draw between $883 to $1,000 a month instead of the former range of $525 to $600. Division chiefs and assistants to the state highway engineer will get from $625 to $725 a month instead of $450 to $525.

NEWS BRIEFS

Business for Bond Buyers—North Carolina's Highway Commission has asked that the second $50,000,000 group of bonds be sold to expand its rural road program. Voters ok'd a $200 million rural road issue last year, of which the first group has been sold. Proceeds of that issue have been almost completely allocated.

Connecticut OK's U. S. Power—Connecticut's Flood Control and Water Policy Commission has approved Army Engineer plans for a power dam at Enfield, on the Connecticut River. The 48,00 kw. power plant at the dam would be the first federal capacity in New England, an area President Truman has marked out for future expansion of federal power.

New Home—Overseas Consultants, Inc., has found a new home in New York City. The new office is at 247 Park Ave.

Bad Luck with Bridges—A pontoon bridge across the Snake River in eastern Washington—itself a replacement structure—has been swept downstream by ice floes, and replaced by a ferry service. The first bridge was wrecked by fire last September.

Both for Each—Ontario and Manitoba jointly will develop the hydroelectric resources of the Winnipeg River in the border area between the two provinces. Benefits will be split between them. A joint engineering board will investigate the possibilities.

It Would Be Texas—While northern states struggle with the problem of financing superhighways, fabulous Texas turns up with a new method—oil men who want to do the job themselves. Three of them plan a four-lane, divided toll road about 220 mi. long between Dallas and Houston. They're undecided, at the moment, whether to seek private financing or sell bonds. They figure trucks would contribute 45 percent of the revenue for the limited-access (and no cross traffic) thoroughfare which is estimated to cost as much as $100 million.

Architects, Please Note—Awards for distinguished design in three classes of buildings will be made by the American Institute of Architects this year. Residential, commercial and religious buildings completed since Jan. 1, 1945, will be considered in this second annual contest. All registered and practicing architects in the United States are eligible. Further details may be had from Walter Taylor, AIA, 1741 New York Ave., N. W., Washington, 6, D. C.

Britain Did It—North Carolina is considering "devaluing" its existing "federal primary" road network so that it may concentrate funds on the highways that remain in that class .Its federal system now contains 7,199 mi. The Highway Commission recommends cutting this to 5,697, of which about 423 mi. would be roads not now in the system.

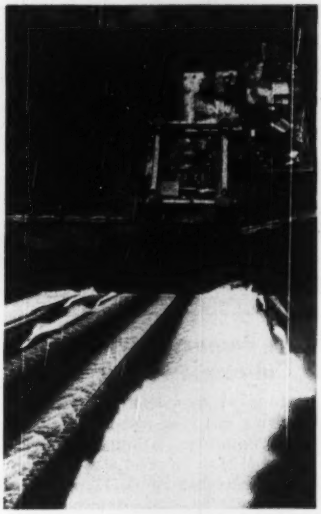
Homeless Mark Time—Philadelphia's $100 million Housing Authority is at the center of a political fight. Incoming Democratic members charge the Republicans with maneuvering to control patronage at stake in the agency's program, a charge Republicans deny. People who want the housing haven't been able to halt the row, which they fear will slow the program.

Lustron, Take Note—National Homes Corp., of Lafayette, Ind., will open a plant at Horseheads, N. Y., April 1 to produce as many homes—30 daily—as it now builds at Lafayette. The company makes prefabricated homes designed to sell, with lot, for less than $6,000. Meanwhile, it's building its eastern dealer group and adding to its delivery truck fleet.

Correction—A picture of a medical building in Houston, Tex., published in ENR's Dec. 29, 1949, issue, page 14, was mislabelled as the Hermann Professional Building of the city's new medical center. It should have been designated the new annex to the Hermann Hospital.

Everybody's Happy—Seattle was pleased to escape a financial burden when Washington's legislature gave planning responsibility for primary and secondary state highways within cities to the state highway department. But the city wanted some planning voice. The state wasn't anxious to take the responsibility, though; so it was pleased when Seattle agreed to help support an engineer who will have offices in the department, yet who will consult with both the city and the state.

Let George Do It—North Carolina's League of Municipalities has recommended that the state assume responsibility for construction and maintenance of all municipal streets. The cities want to escape from what they describe as an unjust apportionment of state road funds between urban and rural areas.



GRAND COULEE CLEANUP—Repairs to the spillway bucket of Grand Coulee Dam, on the Columbia River in northeast Washington, are made 70 ft. under water by the use of this caisson (ENR July 19, 1945, vol. p. 72). The caisson is positioned over the bucket and sunk onto it. Then the water is pumped out and workers descend to the bucket face. Two of the 15-ft. dia. tubes are used to pump air to the work chamber, one for supplies and the other for an elevator to bring workmen to the face.

Sounds Sacrilegious—American colleges should stop copying medieval and colonial designs in their buildings, according to Prof. Walter Gropius, Harvard architect. He says that accommodating students in "pseudo-period" buildings is on a par with asking them to wear "pseudo-period" clothing. "New buildings must be invented, not copied," Gropius added in his exposition of what's needed.

Upstream Reservoirs Needed—Maj. Gen. Lewis A. Pick, chief of Army Engineers, says upstream reservoirs are needed for adequate flood protection on the Santiam River, in western Oregon. Pick expressed doubt as to the feasibility of downstream revetments and levees in the absence of such reservoirs. Farmers have been engaged in a revetment project, and other local interests have been soliciting funds for channel correction and levee work.

Redevelopment power validated by court

Large Pittsburgh and Philadelphia program assured by Pennsylvania Supreme Court decision

Pittsburgh's Golden Triangle redevelopment and a vast comparable program in Philadelphia are on safe legal ground this week as a result of a Pennsylvania Supreme Court decision.

The court ruled that Pittsburgh may acquire business properties through condemnation for re-use other than housing. The ruling came when Justice Horace Stern dismissed an injunction against the Golden Triangle plan (ENR Oct. 6, 1949, p. 17). The injunction was sought by a property owner affected by the Pittsburgh program. There, the city's Urban Redevelopment Authority has begun clearing the area of present tenants in preparation for the $50,000,000 redevelopment.

Holding that the program is "clearly" within the scope of the Urban Redevelopment law, Stern said:

"Since that act gives the power of eminent domain to the Urban Redevelopment Authority, it is for that agency, and not for the courts, to determine whether or not the power should be exercised in this particular instance."

Not just for homes

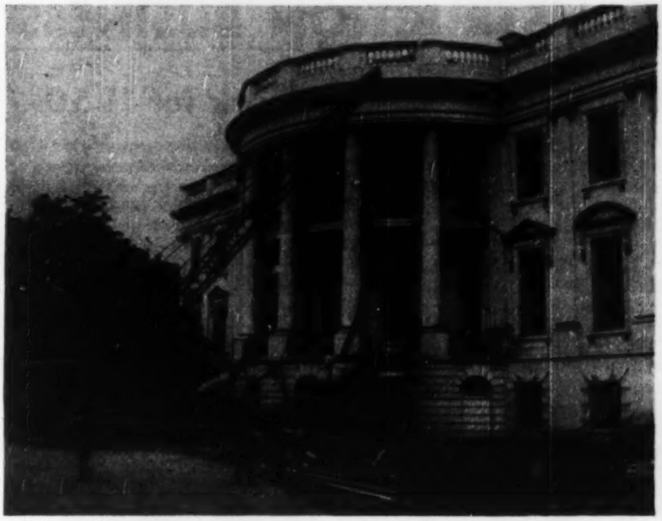
Justice Stern added that, unlike Pennsylvania's Housing Authorities Act, the Urban Redevelopment Act is not restricted to the elimination of undesirable dwellings.

The ruling was hailed by David M. Walker, executive director of the Philadelphia Urban Redevelopment Authority, as especially significant to that city, where comprehensive planning is underway for a similar job.

Philadelphia already has signed an agreement for financing land acquisition for the first redevelopment project —one in which the American Friends, Inc., (Quaker) will help rehabilitate an existing slum.

Pennsylvania's Commerce Secretary, tary, Theodore Roosevelt III, said the State Planning Board has set aside $2,919,000 for Philadelphia's use, of which $680,665 would go for development and slum clearance, the remainder for direct subsidization of housing.

Nine other projects for redevelopment, in addition to that already agreed to with the Friends, will go under contract in 1950, according to Walker and Earle N. Barber, chairman of the Philadelphia authority. Walker estimated the overall cost of these projects at $25,000,000.



WHITE HOUSE RENOVATION—Dismantling gets underway on the White House reconstruction job at Washington. Here, a crane removes a beam from steps leading to south portico. (Wide World Photo.)

Massachusetts roads scheduled swiftly

When the Massachusetts Legislature approves a $100 million bond issue for highways, it expects some prompt action from the Massachusetts Department of Public Works. The record shows it gets just that.

Legislation enacting the bond issue was approved last May 18. It required that all contracts be let by June 30, 1951. At this point, though, the department expects to beat that date by a full year on all projects except one. Contracts for that project —the Boston central artery—will be let this summer and fall, well in advance of the deadline.

The full resources of the department—plus consulting engineering forces—were thrown into the job last spring when the act became law. The department was directed to spend $92,000,000 of the total. The remainder was to be spent by the metropolitan district commission. Of the department's share, not more than $37,000,000 was to be spent on the master highway system for the Boston metropolitan area. Not more than $53,000,000 was to be spent in the remainder of the state and not to exceed $2,000,000 was to be spent on traffic safety devices.

The results so far:

By Dec. 31, $11,872,957 had been alloted for contracts awarded. There had been advertised, with bids not yet opened or with bids opened and contracts not yet awarded, work valued at close to another $14,561,000.

Bids were to be advertised in this volume during the first five months of 1950: January, $6,780,000; February, $11,035,000; March, $5,835,000; April, $2,190,000; and May, $8,051,025.

Traffic safety contracts of $324,983 had been awarded at the end of 1949. The remaining $1,675,016 was to be complete in 1950.

Boston's central artery project is estimated to cost $30,000,000. It calls for an elevated highway from Atlantic Avenue past Haymarket Square and North Station and a new bridge across the Charles River. It includes connections with the Charles Street traffic circle and the Mystic River bridge. Bridge contracts are to be advertised early next month. Largest of the nonmetropolitan area projects is that on route 128, the northern circumferential highway. There, seven contracts, aggregating $18,596,000 are scheduled. On three, bids have been opened. On three more, bids are to be opened next week. The other had not been advertised at the end of the year. Largest of these contracts is $4,925,000 job in the cities of Needham, Wellesley and Newton.

The list of projects reported by the department at the end of the year covered the entire $92,000,000 the department is to spend under the bond act. Normal highway work is in addition to this activity.

CONSTRUCTION BUSINESS

Industrial contract outlook for 1950

Heavy engineering contract awards let by private industry for plant expansion of all types in 1950 may run at about the level of the last quarter of 1949, or 13-15 percent below the 1949 average.

That is the consensus of opinion of three sources: ENR's prediction of Jan. 5 (p. 29); a survey of intentions of leading corporations made by the McGraw-Hill Economic Department; and a recent forecast by the Department of Commerce.

This represents a halting of the downward trend from the 1948 peak. Contracts for industrial plant expansion (including pipe lines and other non-building construction) in 1949 were off 17 percent from the record year 1948, and contracts in the final quarter were 14 percent below the average for all of 1949.

If federal-owned industrial plant contracts (atomic energy plants) are included with private industry, 1949 was only 2 percent under 1948 and 1950 may not be far below 1949.

The tapering off since 1948 followed an initial postwar rush to fill backlog demand as well as a greatly enlarged normal demand for all products stemming from growth of population and income since before the war.

The stability predicted for 1950 might well change suddenly into a boom or decline. Industrial construction is as skittish as a weather-vane and follows business sentiment.

Therefore, those using industrial building forecasts should frequently recheck their projections in the light of any shifts in the business outlook. For example, throughout 1946 industrial building contracts rolled along at an average rate of $93 million a month, but starting in January, 1947, they fell off sharply to average only $65 million in the first half of that year. This was owing to a corporation "buyers' strike" in anticipation of lower building costs; when it became apparent that costs would not come down, business turned around and resumed building at about the pace of 1946, and with prices still rising.

Figures representing all of industry together hide a great many distinctly different individual trends as the accompanying table readily demonstrates.

In 1949, large gains in contract volume were registered by auto, food, textile and refrigeration factories, while all private industrial plant registered a 17 percent decline, and steeper declines characterized the process industries, automotive transportation facilities, pipe lines and railroads.

Again this year the trends of contracts let by different industries will diverge sharply. According to the McGraw-Hill survey, the automobile industry intends to expand its plant and equipment further by 31 percent; on the other hand, railroads plan to reduce outlays by 44 percent.

Industrial Plant Expansion; ENR Heavy Engineering Contracts (in $ thousands)

	% change 1948-9	1949	1948	1947	1946
Private Buildings:					
Transportation Service:					
Railroads	+15	10,761	9,314	12,402	17,198
Automotive	−35	31,449	47,989	26,392	33,544
Public Utilities	−6	235,380	249,820	125,307	93,330
Process Industries	−31	276,715	401,144	292,544	499,302
Food Industries	+33	99,639	75,122	123,152	118,997
Metal Ref. & Rolg	−43	35,087	61,139	46,215	39,833
Metal Working Plants:					
Auto Factories	+322	33,701	8,016	11,526	29,390
Aircraft Factories	−37	966	1,525	2,297	1,698
Foundries	−55	2,355	5,209	2,838	5,692
Mach. & Parts	−23	87,923	113,663	101,173	114,671
Radio	−29	1,308	1,845	1,660	1,045
Textiles (excl. rayon)	+41	13,843	9,846	11,624	16,325
Wood Industries	−49	4,963	8,116	8,121	10,391
Miscellaneous:					
General Factories	+10	113,028	101,102	92,317	122,647
Refrigeration, etc.	+68	2,859	1,704	4,637	9,187
Total Buildings	−12	949,977	1,095,581	862,205	1,113,251
Non-building construction:					
Transmission lines	+8	128,296	119,182	53,853	75,128
Pipe lines	−36	233,710	363,338	236,892	43,314
Railroads	−48	15,655	30,155	57,053	20,356
Telephone	−40	1,606	2,693	9,510	10,578
Radio	+49	6,364	4,274	6,969	....
Total Non-building	−26	385,631	519,642	364,277	149,376
Total, Private Industry	−17	**1,335,608**	**1,615,223**	**1,226,482**	**1,262,627**
Federal-owned plant, (mostly AEC)	..	**247,147**	**824**	**15,899**	**25,000**
Grand Total, Indus. Plant	−2	**1,583,755**	**1,616,047**	**1,242,381**	**1,287,627**

Steel production capacity exceeds earlier hopes

Steel production capacity increased during 1949 substantially more than was expected under plans reported a year ago. The increase raises supply for construction more than had been anticipated.

The new capacity, a record high, is 99,392,800 tons of ingots and steel for castings—more than 3 percent above last year.

The 1949 increase of 3,271,870 tons capacity brought total steel capacity to nearly 18,000,000 tons above 1940. Thus, steel capacity has risen nearly 22 percent since 1940 while the population of the U. S. has increased about 15.5 percent.

Revised 1950 Production rates

Week Beginning	Percentage Based Upon Jan. 1, 1950 Capacity	Percentage of capacity Previously Announced
Jan. 2, 1950	92.9%	96.1%
Jan. 9, 1950	94.0	97.2
Jan. 16, 1950	95.0	98.2

Dropping cost of living may ease labor's demands

Government forecasts of a declining cost of living this year may mean lessened pressure from construction labor for wage increases.

But there are some jokers in this possibility; labor leaders often point to an average long-term increase in labor productivity of about 2½% annually, arguing that wages should therefore go up at least that much. The postwar wage rise still has great momentum, which should stay strong as long as work is plentiful.

The economists forecast that by the end of March, the consumers' price index will be off about a point—from last November's 168.6; by mid-year it will be down another point. In the second half of 1950, however, the crystal ball gets cloudy; some see still another drop, maybe two or three points at the most.

AAC cost index down

The American Appraisal Co. construction cost index declined 3½ percent or 18 points between December, 1948 and December, 1949 to 483 (1913 = 100).

Decreases during the past year resulted from better labor efficiency and reductions in certain building material prices, principally lumber. To some extent these decreases were offset by higher wages and increased freight rates. Construction costs stabilized in the fourth quarter and may turn upward in 1950.

BIDS AND BIDDERS

(Major project news received after Construction Reports, page 58 went to press.)

Hydro Development—Republic of Venezuela, Caracas, plans constructing hydroelectric development of falls on Caroni River, near Felix. Estimated cost is $26,000,000.

Hot Roll Strip Mill—Pittsburgh Engineering & Machine Co., Pittsburgh, Pa., has been awarded contract for hot roll strip mill at Portsmouth, O., by the Detroit Steel Corp., Detroit, Mich., to cost $10,000,000.

Chemical Plant and Refinery—Pontiac Refining Corp. and Chicago Corp., Corpus Christi, Tex., plans constructing plant at Corpus Christi to manufacture ethylene-glycol and ethylene oxide and to produce high test gasoline to cost about $15,000,000. Company has purchased site of Great Southern Refinery.

Apartments—S. N. Neilson & Co., Chicago, Ill., has been awarded contract to build $8,683,000 apartments in Chicago, by the Michigan Shore Apartments, Chicago. Loebl, Schlossman & Bennett; Alfred Benesch & Associates, and S. R. Lewis are architects for the apartments.

Interceptor Sewer—East Bay Municipal Utility District, Oakland, Calif., awarded contract Sections 5 and 6 South Interceptor Sewer in Oakland to Fred J. Early, Jr., Co., Inc., San Francisco; Duncanson-Harrelson Co., San Francisco, and Stolte Inc., Oakland, at $4,380,897. John Longwell is chief engineer for utility.

Water Storage Reservoir—Chambers-Liberty Counties Navigation District, Grover Chambliss, chmn., Liberty, Tex., will build for industrial purposes Lake Liberty water storage reservoir at around $4,000,000.

New Jersey Turnpike—Poirier & McLane Corp., New York, N. Y., has been awarded the first contract to be let on the 118-mi. superhighway section in Linden, N. J., at $1,968,730 by the New Jersey Turnpike Authority, Trenton.

Hotel—Penn-Harris Hotel, Harrisburg, Pa., plans constructing addition at $2,000,000. Lawrie & Green, Harrisburg, Pa., are architects, Holabird & Root & Burgee, Chicago, Ill., associated architects.

Homes—F. & S. Construction Co., Phoenix, Ariz., plans to build 500 brick homes on eastern section of Lakeland Blvd., on 135-acre tract to cost $15,000,000. Separate contracts are to be awarded.

Shopping Center—Stoneson Bros., San Francisco, will build a shopping center for the Lake Merced District including department stores, theaters, medical-dental building for an estimated $30,000,000. Wurdeman & Becket, Los Angeles, are architects.

Plant—Bedford Construction Co., Chicago, was awarded contract by Corn Products Refining Co., for a concrete and steel boiler plant in Bedford Park, Ill., with two high-pressure boilers, generators. Cost estimated at $8,000,000. Sargent & Lundy, Chicago, engineers.

Hydraulic Turbines—U. S. Engineers, Walla Walla, Wash., awarded contract for our 111,300-hp. hydraulic turbines, for McNary Dam power house in Oregon to S. Morgan Smith Co., York, Pa., at $4,974,090.

Excavation of Intake Channel at Chief Joseph Dam—General Construction Co., Seattle, Wash., was low bidder for excavation of intake channel, also relocation of adjacent State Highway 10-B for Chief Joseph Dam, at $2,265,325, when U. S. Engineers, Seattle, opened bids Jan. 17.

Warehouse—Union Electrical Co. of Missouri, St. Louis, will take bids about Feb. 24 for warehouse and office at St. Louis, to cost $2,000,000. Rathmann, Koelle & Carroll is architect, William C. E. Becker, structural engineer, and John D. Falvey, mechanical engineer, all of St. Louis.

Covered Drainage Canal—Sewerage and Water Board, City of New Orleans, La., will take bids March 1, for reinforced concrete-lined and covered canal in Orleans Ave., and North Jefferson Parkway to Pumping Station 7. Estimated cost of the canal is $2,700,000.

Infirmary Building and Tuberculosis Hospital—Bureau of Building Construction, City of Baltimore, plans constructing $3.5-million additions to City Hospital, including an infirmary for which plans by Lucius R. White, Jr., of Baltimore, will be completed about June 1. Plans for a $2.5-million tuberculosis building are underway by Palmer, Fisher, Williams & Nes, Baltimore. Van Rensselaer Saxe, Baltimore, is structural engineer and Egli & Gompf Inc., of Baltimore, is mechanical engineer on both structures. R. E. L. Williams is engineer for the owner.

COSTS AND VOLUME

ENR INDEX NUMBERS

Index Base = 100		1913	1926
Construction Cost..	Jan. '50	484.74	233.01
Building Cost	Jan. '50	356.09	192.49
Volume	Dec. '49	310	136

Activity This Week

As reported to ENR
(in millions of dollars)

Amount of contracts let

	Week of Jan. 26 1950	Cumulative 1950 (4 wks.)	1949 (4 wks.)	% chge
Federal	$19.7	$275.6	$130.0	+111
State & Mun.	33.7	211.8	206.0	+3
Total Public.	$53.4	$487.4	$336.0	+44
Total Private	163.0	428.0	229.8	+86
U. S. Total..	$216.4	$915.4	$565.8	+62

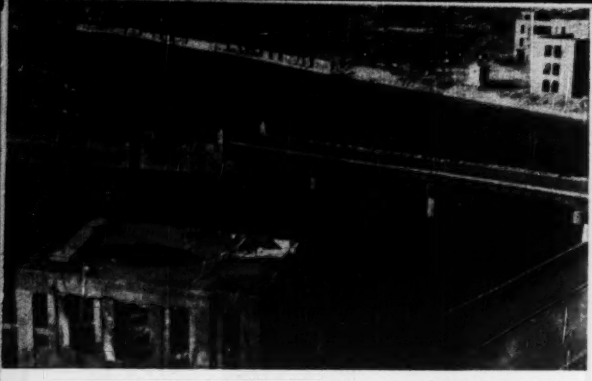
Contracts by type of work

	This Week	Cumulative 1950 (4 wks.)	1949 (4 wks.)	% chge
Waterworks.	$2.1	$24.4	$9.6	+154
Sewerage ..	6.9	16.9	18.3	−8
Bridges	5.4	25.9	29.8	−13
Highways ..	8.7	63.1	47.1	+34
Earthwork, Waterways	3.3	26.0	50.0	−48
Buildings,				
Public ...	13.9	294.4	164.9	+78
Industrial.	25.8	74.9	40.8	+83
Commerc'l	132.1	319.5	163.4	+96
Unclassified.	18.2	70.2	41.9	+66

NOTE: Minimum size projects included are: Waterworks and waterway projects, $28,000; other public works, $50,000; industrial buildings, $68,000; other buildings, $250,000.

New capital for construction

	Cumulative 1950 (4 wks.)	1949 (4 wks.)	% chge
NON-FEDERAL ...	$297.2	$359.1	−17
Corporate Securities	74.7	200.3	−63
State and Municipal	222.5	158.8	+40
Total Capital	$297.2	$359.1	−17



750 ft from Hiroshima "ground zero" (where the bomb exploded) only a few sturdy buildings remained.

1,300 ft Although gutted by fire a Nagasaki school did not entirely collapse. Column splices were inadequate.

. . . If your building is far enough away from "ground zero" of a bomb — and many will be — better design will give it added protection in any battle of . . .

Bombs vs. Buildings

Harry Lake Bowman
Professor of Civil Engineering, Drexel Institute of Technology, Philadelphia, Pa.

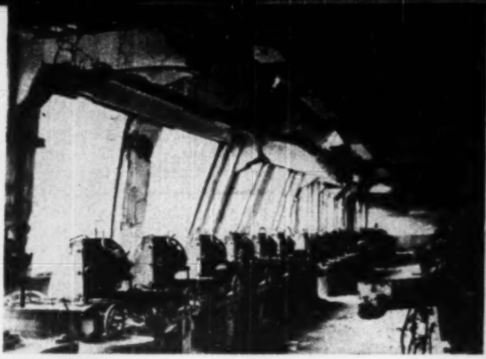
2,500 ft Light steel factory reduced to tangled wreckage.

This article represents the first statement to be cleared by the Atomic Energy Commission on structural resistance to bomb blasts. The author is the top U. S. authority on the subject. Now serving the AEC as a consultant on matters pertaining to weapons effects and protective construction, Harry Bowman was sent to England by the War Department in 1942 to study bomb damage, and later (1944-46) was director of the physical damage division of the U. S. Strategic Bombing Survey. Thousands of bombed buildings in Europe and Japan have come under his scrutiny. A veteran structural design specialist, occupying a unique position with respect to knowledge of the atomic bomb, Professor Bowman presents a message that every engineer should read.

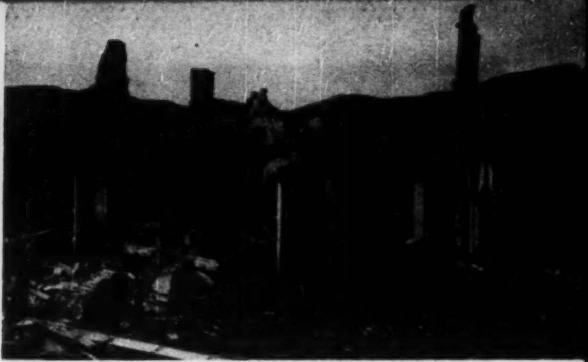
The vertical concentration of some American cities, which is unique in the world, gives us cause to worry about the next war. In the past there has been little reason to attempt to design bomb-resistant structures. The advent of atomic warfare, however, together with the realization that any kind of warfare may come closer to home next time, makes it imperative that American engineers give some serious thought to such construction.

There seems to be a tendency on the part of designers and engineers to wait for the government—either military or the Atomic Energy Commission or some agency concerned with civil defense—to publish charts and tables that tell in precise terms exactly what one must do to give any structure an increased resistance to the effect of atomic weapons. The fact is that a slight reorientation of our thinking, and some relatively minor changes in emphasis on factors which are already taken into account in the design of structures of many types, will greatly add to the blast-resistant strength of these structures. The design principles that provide resistance to winds and earthquakes are quite simple, and their extension to provide bomb-blast resistance is far from revolutionary. The principles of design that will give a great measure of protection against distortion and collapse under blast stress are proven principles with which every engineer is familiar.

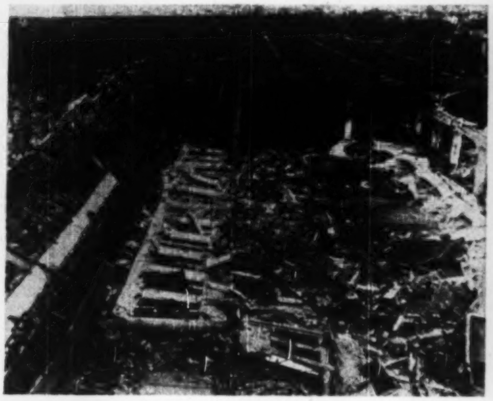
Since he is continually attempting to answer specific questions on bomb-resistant construction, the writer is well aware of the knowledge that the designing engineer craves. It is discouraging to be forced to record at the outset that many of the questions can not be answered in a direct manner, and that many specific figures that are wanted are yet unknown. It is pos-



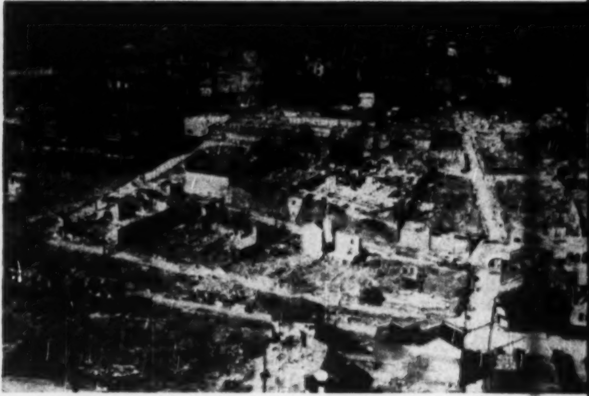
1,900 ft Blast pressure buckled roof beams and broke columns in trade school in Nagasaki.



2,000 ft Load-bearing brick walls of this Nagasaki church offered no resistance, crumbling in large chunks.



6,000 ft Ineffective horizontal bracing in both tied-arch concrete and steel trussed roofs led to collapse.



10,000 ft Fireproof construction would have saved most of the buildings in this area of Nagasaki.

sible, however, to state a number of general principles which, if followed, will vastly increase the safety of construction.

The Considerations . . .

One of the accompanying drawings shows the form of the air-pressure curve that follows the burst of a bomb. There is a practically instantaneous rise above, followed by a decrease below, normal atmospheric pressure. Variations from atmospheric pressure decrease with distance from the point of burst, whereas the durations of both the positive and negative phases *increase*. The only importance of the negative phase follows from the fact that the entrapped air, which is at normal atmospheric pressure in ceilings and walls, strips plaster and brick or stone veneer. From the standpoint of strength the resulting damage is negligible; the injury to personnel may be extensive.

A look at the structural difficulties may be fruitful. The blast load from an explosion is a *dynamic* load of extremely short duration. The response of any loaded member is a function of its period of vibration, which differs for large and small members, for continuous beams, and for panel systems continuous in two directions. If all of the above were designed for the same unit stress and the same static load, each would be differently stressed by a given dynamic load. In consequence, it is impossible to give a single equivalent static load for the design of all members of a complex structure.

So far, mathematical attempts to deal with the problem have resulted only in information which is of little help to the designer confronted with a practical problem. In addition, it is known that whereas damage from the explosion of a conventional high-explosive bomb is largely dependent on impulse—the product of time and variable pressure—the damage from the explosion of an atomic bomb, which is of relatively greater duration, is more nearly a function of the peak pressure alone.

The geometric form of the loaded object also has an influence on the load. It is well known in dealing with wind forces that form must be considered, and the so-called "shape factor" taken into account. This also is true in dealing with blast loads.

Furthermore, a load from a bomb burst is a one-time—if ever—load. To attempt to design so that the yield-point stress of a member is not exceeded would be uneconomical and unnecessary. It has been proposed, therefore, that the stresses should go into the plastic range. One proposal is to design so that the structure will suffer permanent deflection equal to one half of the deflection that would accompany collapse. Surely, this is a new kind of factor of safety.

Today the atomic bomb is prominent in the minds of all. But there is no such thing as *the* bomb. There are many bombs. It has been widely announced that the bomb detonated at Nagasaki was more powerful than the one at Hiroshima, and that the bombs tested at Eniwetok were more powerful than the Nagasaki bomb. There is no way of predicting what future developments will be or, more to the point, what the strength of a bomb developed by an enemy will be. Also, the distance of a given structure from the point of burst will always be unknown. It is impossible, therefore, to give definite numbers for design.

What Bombs Can Do . . .

Knowledge of a few facts about atomic bombs will be helpful in attempting to understand the general problem. Such knowledge must come from a study of what occurred at Hiroshima and Nagasaki where the bombs were fuzed to detonate high in the air. The Japanese estimated that the heights of burst were 1,800 to 1,970 ft. While there is no assurance that an enemy might not detonate his bomb in water adjacent to a city, on the surface of the ground or underground—each of which would bring its own unique problems—it is more likely that he would resort to an air burst because the latter would devastate a larger area on the surface of the ground.

From such a height of burst there would be four effects near the surface of the ground. (1) blast, that is, a wave with its front travelling with approximately the velocity of sound would engulf objects in a high pressure; (2) wind of considerable intensity would follow the blast as the highly heated air near the point of detonation expanded; (3) heat travelling with the velocity of light, that is, practically instantaneously, would strike exposed objects; and (4) gamma rays, similar in effect to the familiar x-rays, would penetrate where they struck.

Two additional effects should be mentioned. First, from the detonation of the bomb there would result highly-radioactive fission products that would rise with the cloud from the bomb to be scattered harmlessly at great distances by the air. Second, near "ground zero"—the point on the ground directly beneath the point of burst—the gamma rays would cause objects to become radioactive at a level which, to judge by Japanese experience, would be harmless to those who entered the area on rescue missions immediately after the incident.

The heat, or flash, would cause roof tile to bubble and granite to peel over an area of some acres near ground zero and would char the surface of wood-poles, fences, etc. for a distance of two miles from the point of burst. In addition, it would start fires in highly inflammable materials.

In discussing blast and wind, which may be considered together, the concept of "structural damage" is useful. This is defined as damage which requires the replacement of a main structural member—beam, girder, truss or column. The accompanying simplified chart of the result of the studies at Hiroshima and Nagasaki serves for a reasonably accurate portrayal of findings. For example, in multi-story buildings damage to main supporting members made 50 per cent of the floor area unusable at 1,800 ft.

As an additional example of blast damage, consider the effect on residences. These had timber frames and plaster-on-bamboo-lath walls, and fared as follows:

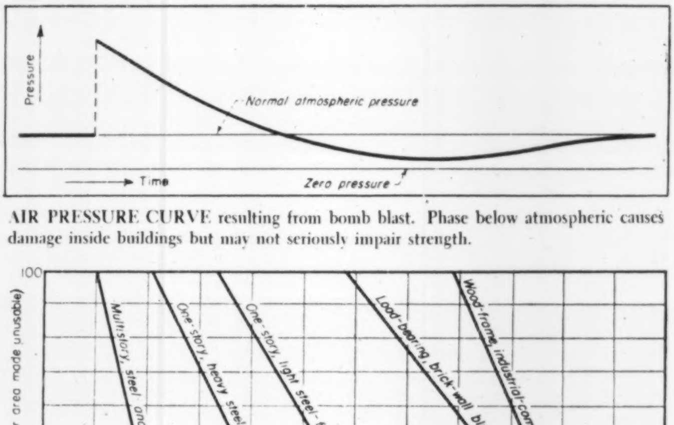
Effect	Feet from Ground Zero
Complete collapse	2,500
Damaged beyond repair	5,200
Uninhabitable without extensive repairs	7,500
Uninhabitable without first-aid repairs	8,000

The spread in space of this damage is better realized when it is recalled that a circle of 8000-ft. radius has an area of 7¼ square miles.

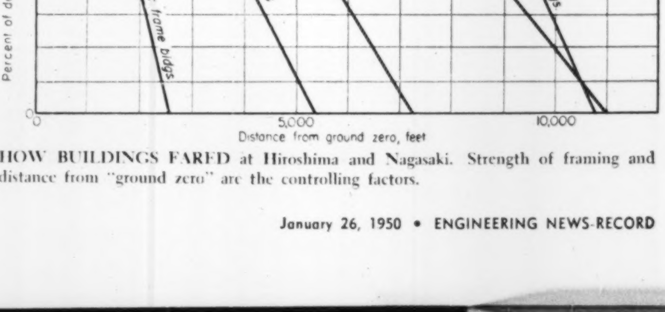
The blast action is a short-time increase of air pressure. The outer pressure will engulf and tend to crush tightly closed structures. As windows or light wall panels fail, the pressure enters the structure and backs up the outer walls, sometimes before the outer pressure has been able to overcome their inertia and set them in motion. Although the wave front advances with the velocity of sound, there will be an appreciable time when one end of a long, tight-wall building is subjected to a load before the pressure arrives to act on the rear of the structure. Such loading must be resisted, of course, by the building frame.

To give an idea of the order of magnitude of the forces involved it will be of interest to note that at a distance of one mile from the point of burst the positive phase of the blast pressure from a bomb like that detonated at Nagasaki will have a duration of about one second; the negative phase will be twice as long. At this distance the peak "side-on" over-pressure will be approximately one half the normal atmospheric pressure, and it is easy, therefore, to see the importance of the rapid backing up of pressure which results from the failure of windows and light walls.

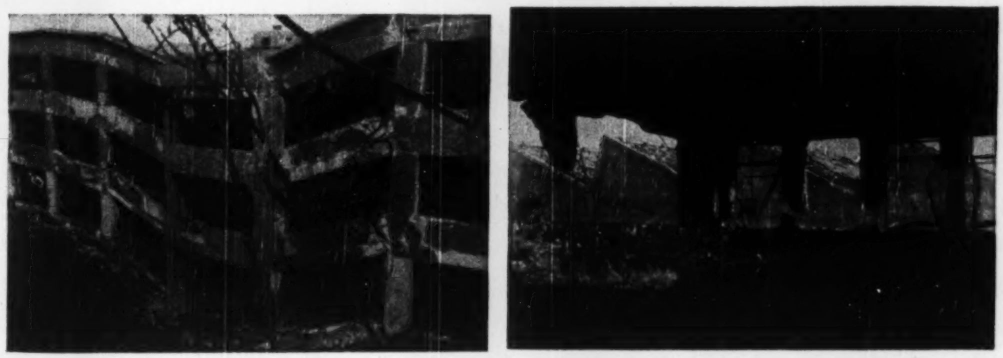
The "side-on" pressure is measured by placing the gage so that the recording surface is on a radial line to the center of the explosion. The "face-on" pressure on a surface normal to the



AIR PRESSURE CURVE resulting from bomb blast. Phase below atmospheric causes damage inside buildings but may not seriously impair strength.



HOW BUILDINGS FARED at Hiroshima and Nagasaki. Strength of framing and distance from "ground zero" are the controlling factors.



NOT ONLY ATOMIC BOMBS but high-explosive types cause devastating damage. This one, which cratered outside this Nagasaki factory, sheared off the columns. Note (right) that roof was strong enough as a cantilever to resist collapse.

radial line will be about twice the "side-on."

Having glanced at the difficulties, must it be concluded that nothing can be done to increase bomb resistance? Not so at all! A number of worth-while expedients which will aid resistance are listed below in a somewhat random order.

What You Can Do . . .

In an attack, either by conventional high-explosive bombs or by an atomic bomb, curtain walls, if close enough to the point of detonation, are likely to become flying missiles. One can readily imagine the great mass of rubble that would fill the streets if an atomic bomb were to explode over the downtown area of a large American city. Greater safety will be achieved if integrally poured reinforced-concrete walls are attached to the frame. Moreover, the frame itself will thereby be strengthened against lateral forces.

Two common sheathing materials for mill-type buildings are corrugated iron and corrugated asbestos. An acquaintance with the action of these two under a bombing attack shows that the frame will be severely loaded—and, therefore, distorted—when covered by the former which transmits high loads before it fails. The asbestos, on the contrary, shatters before it greatly loads the frame, and the resulting debris is not heavy enough to damage equipment which is at all rugged.

For the construction of a manufacturing plant, the rule may be suggested, therefore, that light-weight or delicate equipment should have the protection of integrally poured walls rigidly attached to the frame, while strongly built equipment is reasonably safe in a building with asbestos siding and roofing. With, in the latter case, a proviso: tarpaulins or other materials must be available to afford protection from the weather if the sheathing should be blown away.

It is unfortunate that the most abundant type of structure in the larger American cities is the load-bearing brick-wall building because experience demonstrates that there are few other types which have poorer resistance to blast. In this general connection, it will be apparent that there is a considerable hazard in the use of bricks or concrete blocks for walls, and in the use of precast concrete slabs for roofs.

There is much value in continuity, in the use of a profusion of bracing and in sturdy connections between members. It is known that the California type of earthquake-resistant construction costs from 10 to 15 per cent more than conventional construction that is not designed for large lateral forces. Undoubtedly the earthquake-resistant construction would be greatly superior in its bomb-resistant properties.

In studying the damage caused by high-explosive bombs, numerous examples were seen where structures were standing with little or no distortion after a main member—column, beam or girder—had been cut. In contrast, collapsed structures were seen where it was apparent that a bit of additional strength would have permitted them to remain upright. It is suggested that by some ingenuity in design (and by the use of stresses at or slightly above yield-point values) a structure, either steel or concrete, could be built at an insignificant increase in cost in which any main member could be cut without the collapse of any other such member.

Particularly if a structure is to be subjected to attack by high-explosive bombs, ordinary reinforced-concrete construction has several weaknesses which are peculiar to that material. A bomb that perforates the roof alone, or the roof and a single story, will probably cause enough uplift to rupture the column splices. Joining the column reinforcing rods at splices by butt or lap welds and hooking the rods at the roof level will add a considerable measure of strength.

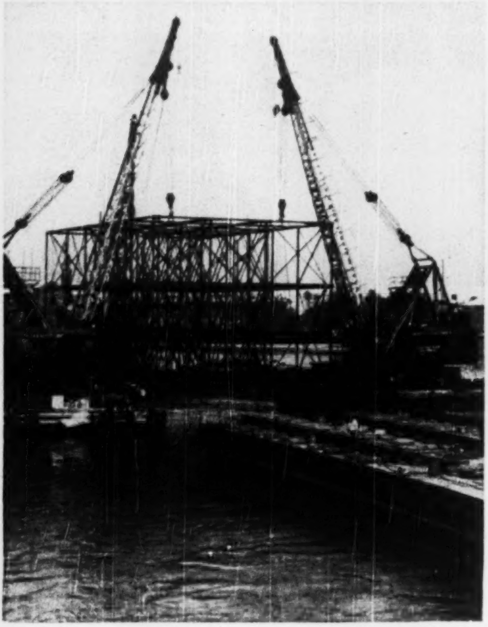
Also, in the roof or floor above the point of burst, the reversed (that is, upward) loading will produce tension in the tops of the beams at the centers of their spans, and will rotate, through an angle of 90 deg. the direction of the diagonal tension in the beam webs. In consequence, there should be some "negative" reinforcing steel throughout the tops of the beams, and "shear" reinforcing should consist of vertical stirrups because the usual bent rods will be *in* rather than *across* the cracks which tend to form.

Because of the smaller surfaces which they expose to blast, open-web trusses are less likely to be damaged by blast than are solid-web girders.

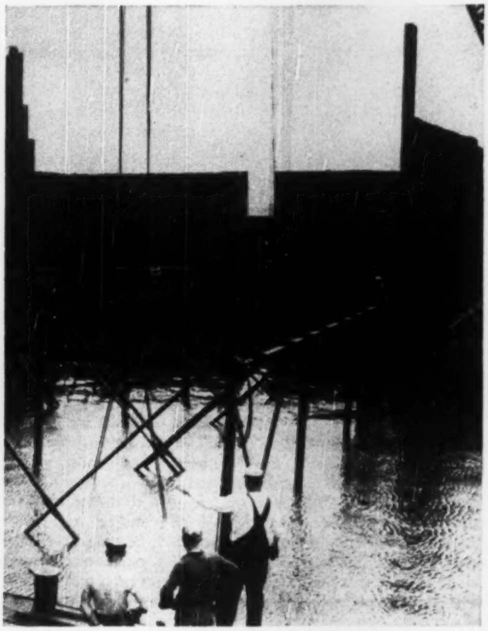
Fire is a real menace. The detonation of an atomic bomb (or a heavy attack with incendiary bombs) will surely be followed by fire which will burn over an area of 6 to 8 miles. With buildings opened up by blast there is the danger that fire will enter from the outside even though the structure was not ignited by the primary flash. Space around a structure will be of value in preventing fire spread and, in addition, all normal precautions—for example, enclosed stair wells, sprinkler systems served by interior water tanks, fire walls and fire doors—should be utilized.

Clearly, all sites within our borders are not equally liable to an attack. Those in the larger metropolitan areas and especially those which are within or adjacent to obvious military targets are most vulnerable and justify increased safety measures.

Crossing the Delaware from Delaware — Part II



COFFERDAM BRACING section lowered by three cranes into 42 ft. of water. Barge has been pulled out from under bracing.



SECOND SECTION of bracing set alongside first. Four sections gave cofferdams 99 x 225-ft. plan size.

Prefabricated bracing guided 100-ft. sheet piles; concrete plants placed 27,000-yd. seal in 7½ days in . . . Construction

How Delaware is building the river piers for Delaware Memorial Bridge near Wilmington was reported in this journal last week. One pier job, however, deserves more detailed description, which Mr. Davies supplies. Crossing the Delaware River 30 miles below the nearest bridge, (at Philadelphia), the new structure will speed coastwise vehicular traffic. The four-lane bridge's principal feature is its suspension structure, whose 2,150-ft. main span will be the world's sixth longest.—Editor.

A. L. Davies

Assistant to President, Merritt-Chapman & Scott Corp., New York, N. Y.

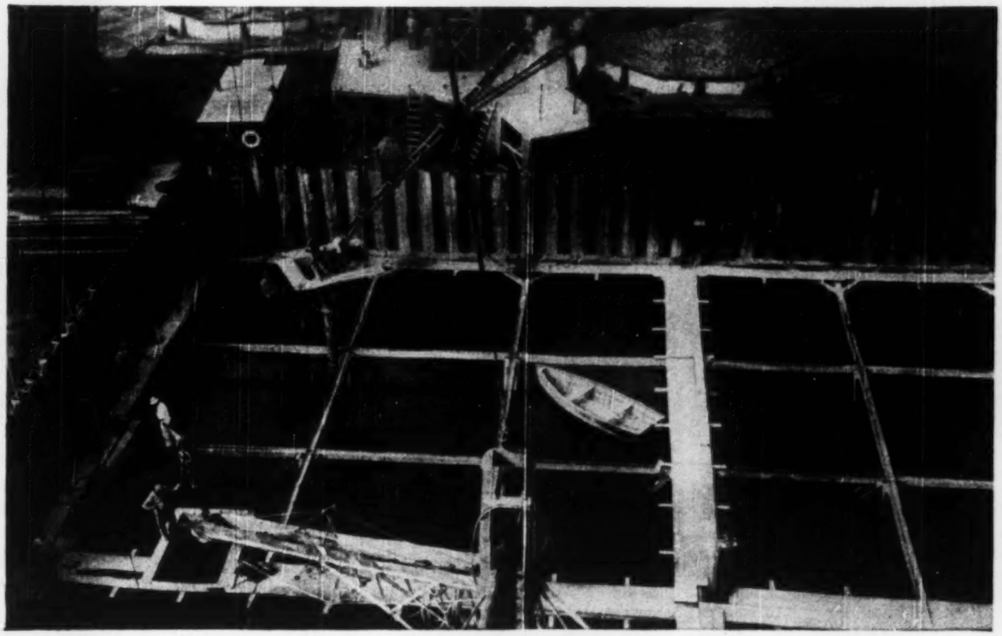
ALTHOUGH the foundations for the west anchorage pier and both tower piers for the Delaware Memorial Bridge were built by the open-well caisson method, shallower water depth at the east anchor pier indicated that the cofferdam method would be more practical. Construction of this pier foundation is of interest because the sheetpiling for the cofferdam was driven around a previously set bracing system, and because the 27,000 cu. yd. of tremie seal concrete was placed in one continuous operation.

The cofferdam bracing system, with overall dimensions of 99 x 225 x 49 ft., was fabricated in four approximately equal sections. Assembled, these sections provided four systems of horizontal walers, the top waler being just above high water level and the bottom waler at elevation −41 mlw. The 14-in.-WF walers were cross-braced at 18-ft. intervals, and each vertical panel was braced diagonally with light angles, providing 18 x 18-ft. clear dredging areas through the bracing system.

Bracing sections were of all-welded construction. The first section was completely fabricated on shore, and skidded onto a barge for transportation to the site, but because of space limitation, arising from delivery of job materials, the remaining three sections were only partly fabricated on shore and completed on the barges. The size and weight of the sections (130 tons) was determined by the capacity of the floating equipment used to lift them from the barges.

Before the bracing sections were set, the river bottom was dredged to El. −42. Six spud piles were driven for each section, to serve not only as guides for placement but also as supports from which the sections were suspended in place. Sections were lifted off the barges and lowered into position by three floating revolving cranes, two of 50 tons and one of 75 ton capacity. After placement, the sections were bolted together by divers.

A total of 445 MZ sheetpiles enclosed the bracing system. These sheets were 100 ft. long and driven to a top elevation of about +15.



TWO TREMIES served by two concrete plants placed 32-ft. seal continuously in four 8-ft. passes that took 7.4 days to complete. For orderly maintenance, each concrete plant was shut down two hours every day, on an alternating time schedule.

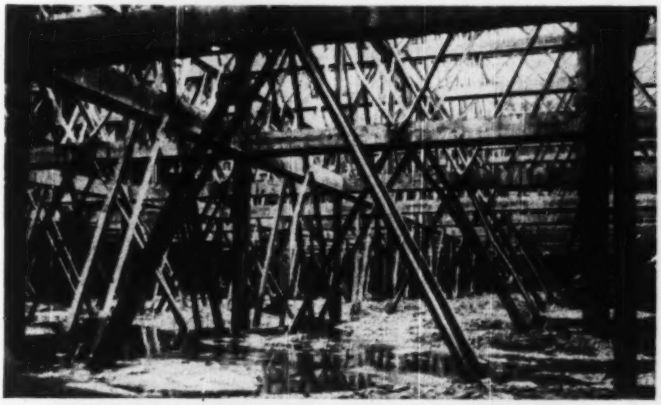
# of Delaware Bridge Anchorage Cofferdam

Driving was done by a floating pile driver with a 60-ft. spud for leads, using a heavy double-acting hammer. The setting of sheets was done by one rig equipped with a 165-ft. boom.

The design called for removal of the river bed material from the predredged El. −42 to El. −70 in order to obtain an adequate foundation material for the anchor block. This excavation was done by three revolving cranes fitted with 2 cu. yd. heavy digging clamshell buckets. The excavated materials, consisting of a varved (annual layer) sand and clay, was loaded into barges for transportation to the approved dumping grounds 2 mi. down river. Final cleaning around the bracing system and other locations not accessible to the buckets was done by liquidizing the soil materials with 2½ in. high pressure water jets and pumping the mud with air lifts. Divers examined the bottom before placement of the tremie concrete seal.

Because of the quantity of concrete required for the seal and the need for its placement in a continuous operation, careful preparations were made, both to insure an adequate flow of materials and to insure that operations would not be interrupted by equipment breakdown at the pouring site.

Bulk cement was delivered by railroad to a pier on the west bank of the river, ¾ mi. from the site, where



DEWATERED COFFERDAM reveals steel maze—bracing was removed and reinforcing bars were set for construction of anchorage pier. (Willard Stewart photos) it was unloaded by conveyor into covered 600-ton barges. A total of 100 cars of cement were used for the seal, with 16 cars on hand at the beginning of the pour and the delivery on the remaining cars guaranteed by the shippers in accordance with production schedule.

Gravel and sand was loaded into 800 to 1,000-ton capacity barges at a commercial plant 30 miles up river, and towed to the site. The supplier was furnished with an aggregates-requirement schedule, from which to plan his shipments. To allow for possible interruptions in the flow of aggregates from this plant to the site, a reserve supply of 5 barges was maintained at a temporary anchorage near the western shore, from which the two job tugs could draw as required. A total of 43,000 tons of sand and gravel, representing 53 barge loads, was used for the concrete seal.

Machines for mixing 27,000 yd.

Two floating concrete plants were used to mix the materials at the site, one being placed on each side of the cofferdam. Plant No. 1 consisted of a 50 x 135-ft. steel hull on which were mounted: (1) a 50-ton revolving crane to load sand and gravel into batching bins from barges tied up alongside; (2) two 2-cu. yd. mixers; (3) batching bins containing 100 tons each of sand and gravel and 250 bbl. of cement; and (4) a single-drum tower hoist. In addition, this barge carried two 500 cfm compressors. An additional plant of 2,000 cfm capacity served the air lift to provide final cleaning of cofferdam before concreting and removal of laitance during the pour.

Plant No. 2 consisted of a 40 x 170 ft. steel hull on which were mounted: (1) a 20-ton stiffleg derrick for handling aggregates; (2) a 1-cu. yd. mixer; (3) batching bins containing 50 tons of gravel, 30 tons of sand and 100 bbl. of cement, and (4) a single-drum tower hoist. Cement was blown from the barges into the bins by pump. To assist in the maximum recovery of aggregates from barges, a small bulldozer, which could be easily slung to and from the barges by the plant cranes, was used.

Plant No. 1 was rated at 180 cu. yd. per hr., maximum, plant No. 2 at 60 cu. yd. To provide for necessary maintenance, a two-hour shut down was scheduled for each plant every 24-hr., the shutdown periods being staggered to provide for continuous operations at all times.

Concrete from the mixers on the floating plants was dumped directly into the hoisting buckets, which were then raised and tripped automatically at the level of the chutes. The chutes were hung from the hoisting tower, and the hopper and 12-in. tremie pipe were handled by revolving cranes. To provide uniform deposition of the underwater concrete with a minimum possibility of segregation, the plants and tremies were periodically moved along the length of the cofferdam to yield four 8-ft. layers for a total of 32 ft. Continuous soundings were made to insure uniformly level depositions. Excessive laitance on the surface of the pour was removed by air lifts. The mix contained 5 bags of air entraining cement per cubic yard.

Concreting of the seal was begun at 8:30 a.m. on August 15, 1949 and was carried on continuously on a 24 hr. basis until completion at 6 p.m. August 22, for an elapsed time of 177½ hr., or 7.4 days. The total yardage of 26,888 produced and poured, resulting in a solid block of concrete 99 x 225 x 32 ft., is believed to be the largest continuous under-water pour by tremie ever made in the United States. During the course of the operation, a maximum of 390 men was employed on the job, with considerable "doubling over" because of the scarcity of certain skilled trades.

During this period the major part of the 52 pieces of floating equipment employed by the contractor on this project were used exclusively for this operation. To promote better integration of the work, the main items of equipment were provided with two-way radios. The average rate of production for the combined plants was 152 cu. yd. per hour, with a range from 90 to 163 cu. yd. The careful preparations made before beginning the operation were justified in that material supply was adequate at all times; no plant breakdowns occurred.

After the seal had set for 7 days, the cofferdam was dewatered to the top of the tremie seal at El. −36.5. The tremie seal buried the lowest wales and shores as planned. The remaining bracing system was cut free of the wales and blocked to release any internal stresses in the concrete structure as concreting continued.

Anchorage block construction

After the top of the tremie seal had been cleaned, sixty 15-ft. dia. well forms of steel plate were set on 18-ft. centers over the top of the pier. The exterior face of the pier was placed against removable steel forms.

Vertical and horizontal reinforcing bars 1 in. dia. were set in the spaces between the wells and exterior face and concreting of the block was carried up in 5-ft. lifts. The wells were carried to El. +5.0 and the exterior forms to −5.0, with granite face above this to El. +15. The facing acted as forms for concrete above El. −5.0.

A total of 42,691 yd. of concrete was poured for the block to El. +5.0. Above El. +5.0 a 10-ft. distribution block, heavily reinforced, was poured using 7,542 yd. of concrete. This operation proceeded in a conventional manner using floating cranes and concrete plants for the entire work.

Project manager for Merritt-Chapman and Scott, contractors, was Wm. Denny, under the general direction of Ralph DeSimone, vice-president. Howard Needles Tammen and Bergendoff, New York, are project engineers for the state of Delaware on the project.

Cities' base for assessing corner-lot paving costs

A majority of cities use special formulas in assessing paving costs on corner lots, a survey of 23 cities by the American Municipal Assn. indicates.

Twelve cities reported that special formulas are used to help relieve owners of corner lots from the burden of paying full paving costs on both sides of their property facing streets. Five other cities make no paving assessments; the remaining six give corner-lot owners no special rate for paving.

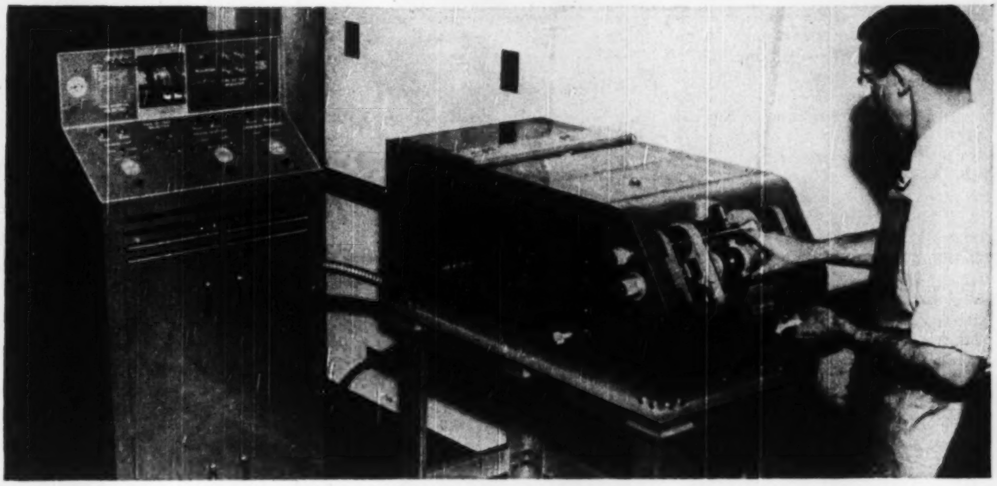
No two special formulas were found to be alike. Some cities grant a fixed-percentage reduction on corner-paving assessments, as in Milwaukee where corner lots are assessed 40 percent of long frontage.

In Buffalo, corner assessment is based on lot long-side and equals 60 percent of the regular assessment for first 100 ft. along this side.

A few cities absorb amount of assessment by which corner lots are relieved. In others this sum is apportioned to those parallel adjacent lots between corner lot and limits of benefited area. In about half of the places surveyed, the city pays for paving intersections.

Flint, Mich., uses a depth-factor table to distribute assessments over the area extending from the corner half-way to the next parallel street. The formula reduces the assessment one-half for each 50 ft. that a lot is removed from the corner. Depth factors for each number of feet up to 250 are compiled in a table to simplify computation. San Francisco employs a variation of the depth factor system.

Of the five cities not assessing costs of paving against abutting property, New Orleans pays for such projects on a city-wide improvement program. Portland, Me., Berkeley, Cal. and Hartford, Conn., also finance paving from general funds. Hartford considers improvements as benefiting traveling public in general, and should therefore be supported by all citizens. Norfolk does not assess paving costs because it lacks statutory authority.



Push-button testing becomes part of soil mechanics as . . .

Machine Speeds Soil Shear Tests

SHEARING tests of soil samples can now be made by an automatic machine that imposes predetermined loads or deflections at specified rates or time intervals.

The machine not only makes the test, but it also plots the results in the form of two curves: Transverse deflection against shearing load and axial deflection against shearing load.

The apparatus replaces older testing methods that involved the services of an operator to perform the various operations manually and to record the data. Tests that were previously economically unfeasible on a commercial scale because of the large number of man-hours involved, are now possible.

The apparatus was developed by Dames & Moore, Los Angeles civil engineers specializing in foundation engineering and applied soil mechanics. Only one machine has been built to date, but the developers are now engaged in designing a new one on the same general principles and embodying the latest advances in electronic motor controls.

The new machine tests soil obtained with equipment that recovers an undisturbed sample chambered within a cartridge of brass rings 2½ in. diam. by 1 in. long (standard Dames & Moore practice). Cylindrical specimens 6 in. in length are, at the time they are removed from the sampling device, wrapped in heavy wax paper and sealed in metal containers for shipment to the laboratory. Comparative tests have indicated inconsequential changes in moisture content and other soil properties even when the samples are shipped great distances. Samples shipped by air freight from Europe have arrived in as good shape as samples obtained locally.

In the laboratory, preparation of the samples for shear testing consists merely of removing the ring-supported soil from its shipping container, cutting off three rings, and placing this cylinder in the testing apparatus. The time required to prepare a specimen is small and the sample is not disturbed.

As soon as the sample has been locked in the sample carriage, the desired normal (or surcharge) load is set on a control dial for application to the ends of the sample, through porous stones.

Four basic types of tests

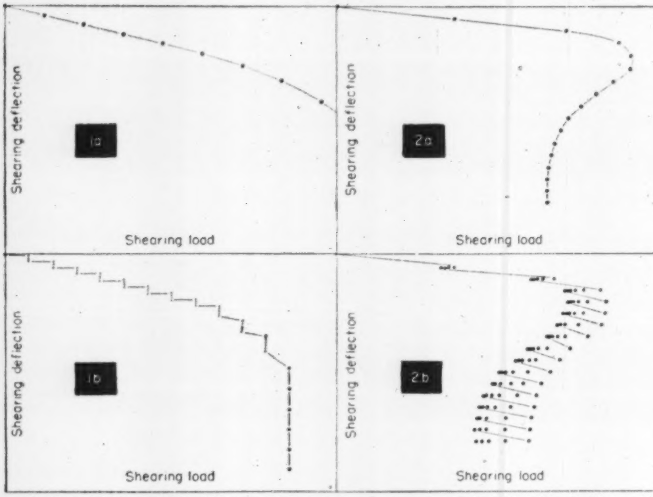
The apparatus imposes direct shear at right angles to the axis of the 3-in. specimen, the shearing surfaces being along two planes, 1 in. apart. These basic types of tests can be made (see illustration):

(1) Shearing load may be imposed as the independent variable, with shearing deflection being the dependent variable and increasing as the soil will allow. The shearing load may be
  (a) applied continuously at a rate which may be selected, or
  (b) applied by increments, each increment being applied at a regular time interval.

(2) Shearing deflection may be imposed as the independent variable, with shearing load being the dependent variable and increasing or decreasing to correspond with the resistance of the sample to shearing. As with shearing load, shearing deflection may be
  (a) applied continuously at a substantially uniform selectable rate, or
  (b) applied in preselected increments applied at selectable time intervals.

Cam-actuated electrical increment and time-interval controls permit a wide selection of the independent variables. The rate of application of shearing load may be varied from 1,800 to 50,000 lb. per sq. ft. per min., and the rate of application of shearing deflection from 0.05 to 0.09 in. per min. The standard cams now used with the apparatus permit increments of shearing load varying from 100 to 5,000 lb. per sq. ft. and of shearing deflection varying from 0.01 to 0.05 in. The time intervals available for applying these increments vary from one minute to four hours.

The tiresome manual job of recording variations in load and deflection with time is eliminated, as well as the subsequent plotting of the data. The machine records in rec-



FOUR SHEAR-DEFLECTION CURVES may be obtained: Shearing load may be applied (1a) at a continuous rate or (1b) by increments and the deflection noted, or shearing deflection may be imposed (2a) at a continuous rate or (2b) by increments and the shearing load noted.

tangular coordinates the shearing load (abscissa) versus the shearing deflection (ordinate) and, on a separate graph, the shearing load (abscissa) versus the normal deflection (ordinate). Both of these graphs are arranged on an 8½x11-in. data sheet that also provides for recording other necessary data concerning the samples. Minimum discernible deflection is 0.002 in.

The recording mechanism prints a point on each graph at time intervals from 10 sec. to 40 min. as desired. After removal of the sample and data sheet from the apparatus, all that remains to be done before the data are ready for interpretation is to draw an appropriate curve through the plotted test data and to obtain the sample's moisture content and density.

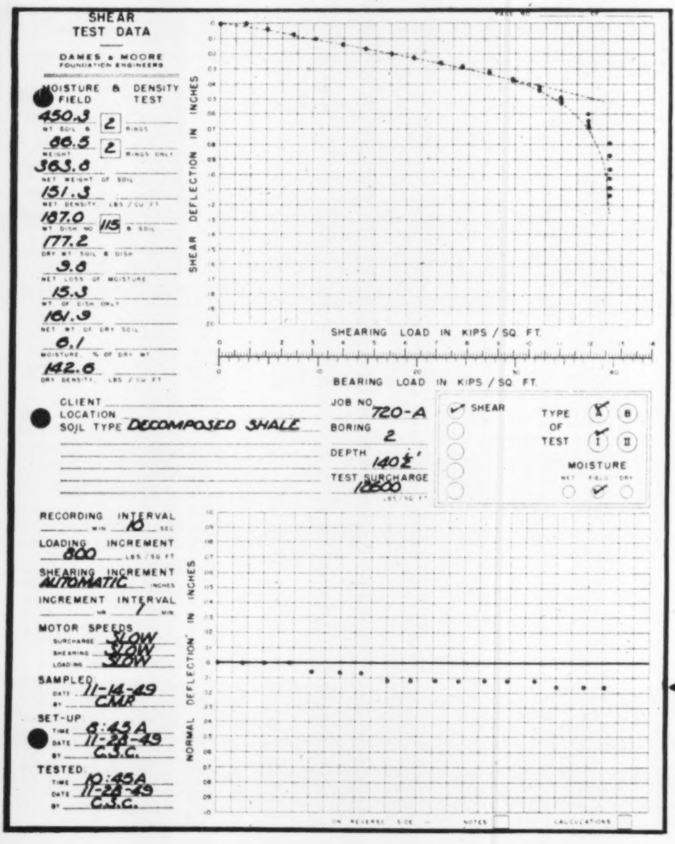
Wide range of load

The apparatus has been designed for maximum versatility. For example, surcharges may range from zero to 15,000 lb. per sq. ft.; the surcharge control is direct reading to 100 lb. per sq. ft.

A maximum shearing load of 28,000 lb. per sq. ft. can be imposed. The series of five interchangeable load measuring units (springs) permit sensitivity over different ranges of shearing load, and thus enable the same apparatus to test soils ranging from very soft clays or peats to firm shales or sandstones.

The controls can be set so that the soil specimen is tested and the data recorded as fast as laboratory technicians can prepare a new sample and data sheet for the machine. On the other hand, the timing can be so set that the machine—unattended—will operate all night or for a period of as much as two days and three nights to test one sample (as for example, over a weekend). Accordingly, it makes possible the obtaining of data on the shearing strength of soils under loading conditions that, on the one hand, are too rapid for an unaided laboratory technician to apply or record and, on the other hand, so slow as to be prohibitive in cost if attendance of a laboratory technician were required.

In principle, the machine is quite simple. It requires two servo mechanisms. One of these maintains the surcharge load regardless of compression or expansion of the sample. The


SHEAR DEFLECTION IN INCHES
0
.01
.02
.03
.04
.05
.06
.07
.08
.09
.10
.11
.12
.13
.14
.15
.16
.17
.18
.19
.20
SHEARING LOAD IN KIPS / SQ. FT.
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
0
10
20
30
40
BEARING LOAD IN KIPS / SQ. FT.
NORMAL DEFLECTION IN INCHES
.10
.09
.08
.07
.06
.05
.04
.03
.02
.01
0
.01
.02
.03
.04
.05
.06
.07
.08
.09
.10

SHEAR
TEST DATA

DAMES & MOORE
FOUNDATION ENGINEERS

MOISTURE & DENSITY TEST
FIELD

450.3 WT SOIL & 2 RINGS
86.5 WEIGHT 2 RINGS ONLY
363.8 NET WEIGHT OF SOIL
151.3 WET DENSITY, LBS / CU FT
187.0 WT DISH NO 115 & SOIL
177.2 DRY WT SOIL & DISH
9.8 NET LOSS OF MOISTURE
15.3 WT OF DISH ONLY
161.9 NET WT OF DRY SOIL
6.1 MOISTURE, % OF DRY WT
142.6 DRY DENSITY, LBS / CU FT

CLIENT
LOCATION
SOIL TYPE DECOMPOSED SHALE

JOB NO 720-A
BORING 2
DEPTH 140½'
TEST SURCHARGE 10600 LBS / SQ FT

☑ SHEAR
○
○
○
○

TYPE OF TEST [✓ A] B [✓ I] II

MOISTURE
WET ○ FIELD ☑ DRY ○

RECORDING INTERVAL
MIN 10 SEC
LOADING INCREMENT
800 LBS / SQ FT
SHEARING INCREMENT
AUTOMATIC INCHES
INCREMENT INTERVAL
HR 1 MIN
MOTOR SPEEDS
SURCHARGE SLOW
SHEARING SLOW
LOADING SLOW
SAMPLED
DATE 11-14-49
BY CMP
SET-UP
TIME 8:45A
DATE 11-28-49
BY C.S.C.
TESTED
TIME 10:45A
DATE 11-28-49
BY C.S.C.

ON REVERSE SIDE — NOTES ☐ CALCULATIONS ☐

ALL THE DATA for one test are conveniently noted on a single sheet. The machine plots two curves, one shearing deflection against load and the other normal deflection against the same load. For most soils, shearing load may be conveniently converted to bearing load by the horizontal scale shown.

other maintains an accurate balance between shearing load and the resistance developed by the sample. This latter servo mechanism controls the dependent variable, whether it be shearing deflection or shearing load, in such a manner that it is always in balance with the resistance of the sample.

Mechanical balancing devices are arranged so that a very slight unbalance in load causes departure from a neutral position. Movements of the balancing mechanism of as little as 0.001 to 0.003-in. are sufficient to actuate micro-switches. These micro-switches operate electrical relays that control electric motors whose operation maintains the balance of load.

Other cam-actuated micro-switches deliver electrical impulses to the motor-control relays and thus cause increments of shearing load and deflection to be applied automatically at pre-selected time intervals. The recording mechanism is actuated by solenoid trips which are energized through relays by cam-actuated micro-switches. Still other micro-switches serve as limits to prevent the machine from overtravelling and to restore it to the starting position at the end of a test. In all, some 24 micro-switches, 9 relays, 5 motors, and 4 solenoids, comprise the controls.

Recording mechanism travels

Of the mechanical features of the apparatus, the recording mechanism (visible in the top rear portion of the machine) is of interest. The data sheet is carried on and moves with the spring load-measuring unit. Its position thus directly reflects the applied shearing stress.

The axial compression or expansion of the sample, and the shearing strain, are delivered to the recording mechanism by gear trains. Two sets of three styluses each are mounted equidistantly on continuous metal belts; each belt is mounted on two pulleys whose axes are inclined to the data board and which are driven by one of the gear trains. The spacing is chosen so that distance between styluses is the maximum ordinate provided by the graph on the data sheet. As the deflection increases beyond the maximum provided by the data sheet, the first stylus leaves the recording space and the second stylus appears at its zero edge.

Actual recording occurs when a solenoid-actuated type bar strikes the top of the styluses and causes them to print through a typewriter ribbon. Recordings are obtained which consist of a series of points printed at uniform selectable time intervals.

The curves for the first three types of tests mentioned in this article are readily recognizable. However, the curve for the last-mentioned type of test (2b) is relatively new and is of interest because it shows the effect on shearing stress of rapidly imposed strains. A specific selectable shearing deflection is imposed rapidly on the sample. A relatively high shearing stress results. The imposed deflection is left on the sample for a period of time while the stress is relieved to a lesser value. This behavior is akin to the type of resistance shown by some soils under impact loading.

It is suspected that a study of tests of this type may result, for example, in a method of quantitatively calculating the amount of overload a soil can stand under seismic conditions, and predicting the differences that will be observed between calculated safe static supporting capacity of piling and dynamic resistance to driving.

New Survey Marker Easier to Make

Douglas L. Parkhurst
Chief, Instrument Division
U. S. Coast and Geodetic Survey
Washington, D. C.

MARKING TABLETS used by the U. S. Coast and Geodetic Survey have, until recently, been 1-lb. bronze castings. Although this design has proved satisfactory the copper alloys are difficult to obtain during periods of national emergency and the weight has seemed excessive. The writer decided to explore the possibilities of re-designing the marker to lighten its weight and to adapt it to mechanical, rather than foundry construction.

The drawing illustrates the design that was adopted. The new marker is a machine shop product, the greater part of the work being done on presses.

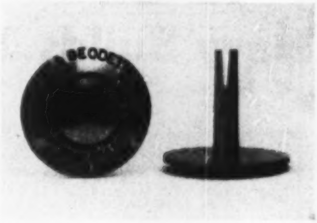
The top is formed of a disc of brass, punched from sheet stock. The next operation is to impress the legend deeply into the top of this disc, using 200 tons pressure on a steel die.

The top of the mark is curved spherically to provide a definite high point, this being of particular importance in bench marks. The disc is cupped in a press to the proper curvature and, since this leaves the under side of the mark arched, a ⅛-in. hole is drilled or punched while the disc is still flat, to allow the escape of any air that may be trapped beneath the mark when it is set.

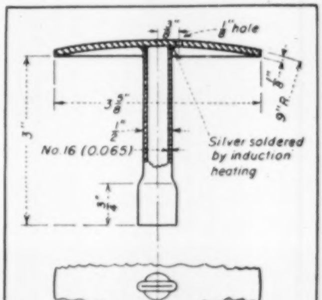
The stem is made of brass tubing, one end of which is cut square and the other stamped flat. This stem is attached to the center of the underside of the disc by hard soldering, using induction heating. The joint so formed is neat in appearance, uniform in quality and exceedingly strong. Testing to destruction proved that the tube would tear apart before the joint would break.

The ⅛ in. dia. hole previously mentioned is located at the outer edge of the stem, so that all air will be expelled as the mark is inserted into cement paste, no voids remaining to fill with water, to freeze and loosen the mark. Flattening the stem's end prevents turning, or extraction.

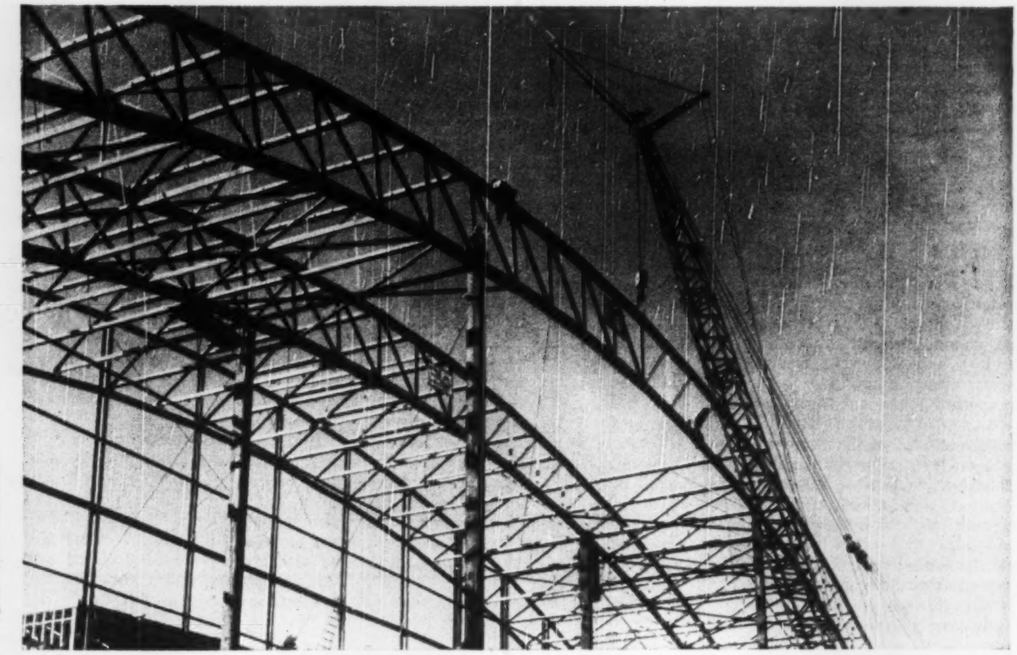
This new mark has the advantages of a saving of one-half the material formerly required; a reduction in the cost of transportation charges and a lessening of the effort required where back-packing of supplies has to be resorted to in mountainous areas. The mark is of neater appearance than when cast, can be made in any machine shop equipped with presses of sufficient capacity, and the work can be performed by unskilled help.



OLD DESIGN–U. S. C. & G. S. marker had to be cast, weighed one pound.



NEW DESIGN – Weighing one-half pound, this mark is die-pressed.



STEEL ARCHES for the Navy's Electronic Testing Hangar were assembled in 64-ft. lengths, supported on temporary columns.

Navy Builds 300-Ft. Welded Arch Hangar

Arsham Amirikian
Head Designing Engineer
Bureau of Yards & Docks, Washington, D. C.

SUCCESSFUL COMPLETION of the Navy's Electronics Test Hangar at Patuxent, Md., marks an important achievement in welded steel construction. The building, which was briefly described in ENR Jan. 16, 1947, vol. p. 80, features a 300-ft. roof of unusual framing:

A series of hingeless trussed arches, with welded joints, and a novel arrangement of bracing are combined to produce framing of remarkable lightness—never obtained before in a steel structure of comparable size and type.

This design was chosen after considering several alternatives, including a riveted design of conventional layout. Various departures from the riveted arrangement resulted in large savings in weight, the tonnage of steel in the final welded structure being about 50 percent of that required for the original riveted design.

The main framing consists of a series of steel arches 25 ft. apart. They are flanked on each side by concrete bents that serve as abutments. Thus, there are three bays in the cross section through the hanger.

The 300-ft. wide center bay has a clear height of about 67 ft. at the middle and 22 ft. at the bents. The side bays, which contain shop and office space, have a width of 37 ft. The balance of the framing consists of the bracing system, which is placed in the top and bottom-chord planes and in the planes containing the vertical web members of the arches. The latter system results in a series of longitudinal purlin trusses fitted between the arches at about 8-ft. intervals.

The arch axis conforms to an inverted catenary. However, to simplify fabrication, the chords were made segmental, running straight in two-panel lengths of 16 ft. each (see drawing).

The arches have a constant depth of about 8.5 ft. Chords consist of T sections, and web members are formed with two angles. Connections of web to chords are made in a lapped arrangement, as shown in the drawing.

Bracing supports roof and ceiling

The purlin trusses also are composed of T-section chords and angle-section web members. Top chords of these trusses support the wood sheathing of the roof and bottom chords carry the ceiling framing. To simplify erection of the roofing, the wood sheathing was pre-assembled in panels of 16 x 12.5 ft. The ceiling framing supports the electronic shielding screen, which is attached to a series of wood joists suspended from the chords of the trusses.

Rigid connection of the arches to

the abutments was obtained by welding the chords to the base plates of anchorage assemblies. These, in turn, are fastened to the concrete bents at their upper corners by means of four lines of anchors cast in the haunches.

The concrete bents are composed of two vertical legs, a sloping top member with axis tangent to the arch axis at the abutment, and a horizontal bottom member that ties together the two legs. Foundations are spread footings, the bents being supported on two lines of continuous footing pads. The arches have no ties between the abutment bents.

Design data

In designing the framing, pressures due to a 90-mph. wind, a 25-psf. snow covering the roof fully or partly, and a hoist load were considered in various combinations The hoist loading consisted of one of the following: (a) 20 tons at the crown of the arch; (b) 20 tons at either or both quarter points; (c) 10 tons at any panel point. Provision was also made for probable settlement and rotation of the foundations, as well as for deflections due to temperature.

Basic stresses were 20,000 psi. for steel and 2,500 psi. for concrete

Weight of the steel framing in a typical 25x300-ft. bay is 95,500 lb. This corresponds to a unit weight of 12.7 psf. of hangar floor. The original riveted framing would have weighed 186,000 lb. per bay. Weight of a typical arch is about 20 tons; weight of the riveted arch would have been 70 tons.

Erection was simple

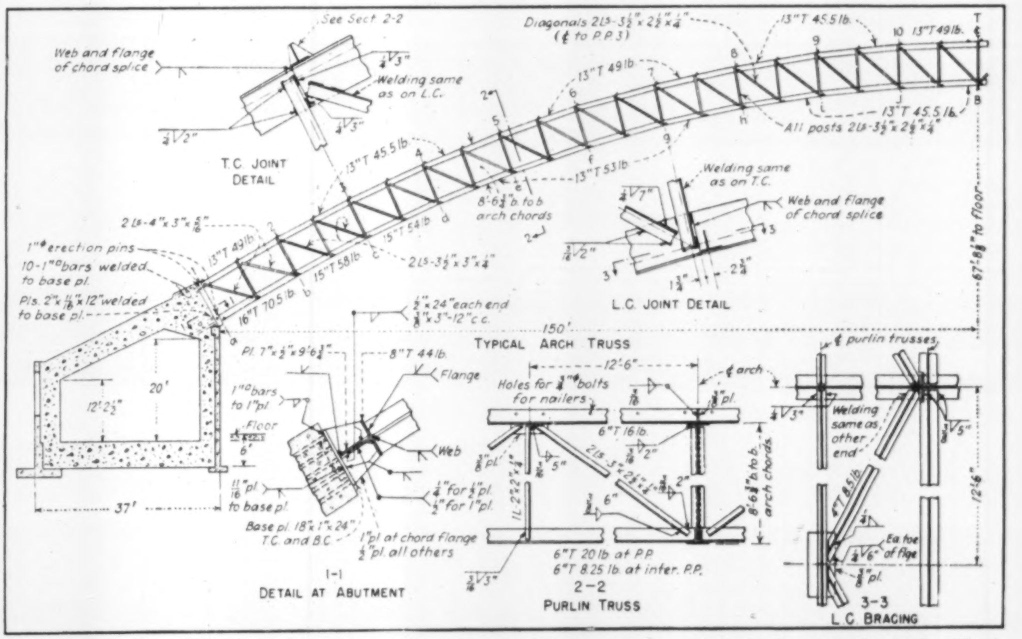
The framing did not create difficult erection problems, nor did it require special equipment. The steel contractor devised a rather simple arrangement.

For ease in handling and assembly, he divided each arch into five erection segments, each about 64 ft. long, the heaviest piece weighing 4.5 tons. These were assembled successively, beginning at the abutments and working toward the center. A set of four columns, one near each inner splice, provided temporary support for each rib assembly.

Only two sets of props were utilized. After an arch was erected, the columns used for it were shifted two bays to support the rib being assembled there The procedure for erecting the framing was as follows:

1. Wall framework (E-line) was completely erected and braced east and west with guys from the top of the columns to ground anchors.
2. Four falsework columns were placed on the F-line and the tops guyed east and west.
3. The F-line arch rib was completed, including bracing between F and E lines. The rib was adjusted to the correct contour and welding started.
4. Four falsework columns were placed on the G-line and braced to the props on the F-line.
5. The arch rib on the G-line was completely erected, including bracing between G and F lines, and adjusted to the correct contour. Welding was then started.
6. When the splices on the F-line arch and about 50 percent of the connections with the purlin trusses were welded, the falsework was removed and re-erected for temporary support of the H-line rib.
7. Operations in steps 4 to 6 were repeated until all arch ribs were erected.

The Electronics Test Hangar is part of the Navy's public works program built under the cognizance of the Bureau of Yards and Docks, of which Rear Admiral J. F. Jelley is the present chief. The framing was designed in the bureau under the writer's supervision and fabricated and erected by the American Bridge Co. Tuller Construction Co., of Red Bank, N. J., was the general contractor.



See Sect. 2-2
Web and flange of chord splice
Welding same as on L.C.
T.C. JOINT DETAIL
Diagonals 2Ls-3½"x2½"x¼" (℄ to P.P.3)
13"T 45.5 lb.
10 13"T 49 lb.
13"T 49 lb.
13"T 45.5 lb.
All posts 2Ls-3½"x2½"x¼"
13"T 53 lb.
8'-6¾" b. to b. arch chords
2Ls-4"x3"x5/16"
1"⌀ erection pins
10-1"□ bars welded to base pl.
Pls. 2"x11/16"x12" welded to base pl.
13"T 49 lb.
15"T 58 lb.
15"T 54 lb.
16"T 70.5 lb.
2Ls-3½"x3"x¼"
Welding same as on T.C.
Web and flange of chord splice
L.C. JOINT DETAIL
67'-8⅝" to floor
150'
TYPICAL ARCH TRUSS
½"x24" each end
⅜"x3"-12" c.c.
Pl. 7"x½"x9'-6¾"
8"T 44 lb.
Flange
1"□ bars to 1" pl.
Floor
20'
12'-2½"
6'
37'
Web
11/16" pl. to base pl.
¼" for ½" pl.
½" for 1" pl.
Base pl. 18"x1"x24" T.C. and B.C.
1" pl. at chord flange
½" pl. all others
1-1
DETAIL AT ABUTMENT
12'-6"
Holes for ¾"⌀ bolts for nailers
℄ arch
6"T 16 lb.
⅜" pl.
1L-2½"x2"x¼"
2Ls-3"x2½"x¼"
8'-6¾" b. to b. arch chords
6"T 20 lb. at P.P.
6"T 8.25 lb. at inter. P.P.
2-2
PURLIN TRUSS
℄ purlin trusses
Welding same as other end
6"T 8.5 lb.
Ea. toe of flge
⅜" pl.
12'-6"
3-3
L.C. BRACING

ALL JOINTS in the roof framing and connections at the concrete-bent abutments were welded as indicated in the details. Chords of the arch are straight T-sections over a two-panel length. Bracing is located in plane of chords and vertical web members.

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DEVELOPMENTS ABROAD

Belgian Road Progress

The Ministry of Public Works in Belgium believes that it is of major importance that roadways in that country be widened. At present the width of main highways is only 29 ft. It is estimated that a 41-ft. roadway is necessary for modern traffic.

To make such a change presents many difficult problems. In some cases the best solution seems to be to divide the existing highway into two one-way roads. This has been done on the Brussels-Antwerp and Brussels-Ostend highways.

By the end of this year, it is hoped that all bridges damaged during the war will have been restored. It is the intention of the government to build some 450 miles of new roads within the next ten years, including an especially important one to be called the "Route de Wallonie."

Bulgaria's 5-Year Plan

Between 23,000 and 30,000 homes for industrial workers will be built under Bulgaria's new 5-year construction plan, according to a government announcement. Even more homes are needed, but additional materials for the purpose cannot be allocated now because of the demands for industrial buildings.

During the same 5-year period the town council of Sofiia has agreed to undertake construction of apartment buildings totalling 1,340 units. Last year in the Sofia area 18 buildings with 557 apartments were built.

Dr. H. V. Hyde to head Inter-American Sanitation

A physician with broad public health experience is taking over the post vacated by a civil engineer as director of the division of health and sanitation for the Institute of Inter-American Affairs, but the change is said to presage no diminution of IIAA emphasis on sanitary engineering in the cooperative programs carried on with Latin American countries.

Dr. H. van Zile Hyde is the new director, succeeding Clarence I. Sterling, Jr. on Feb. 15, after nearly nine years as a medical officer in the Public Health Service, Federal Security Agency. After the war, he became assistant chief of the USPHS Division of International Health. Recently he has also served as U. S. Representative on the executive boards of both the World Health Organization and the Pan-American Sanitary Organization. Dr. Hyde was an adviser on the U. S. delegation that got top priority ranking for sanitary engineering in the future program of WHO at that organization's first meeting (ENR, Aug. 26, 1948, p. 7).

Sterling joins the Massachusetts Department of Public Health as director of the division of sanitary engineering and deputy commissioner of health for environmental sanitation, succeeding Arthur D. Weston, who retires after years of service as state director of public health.

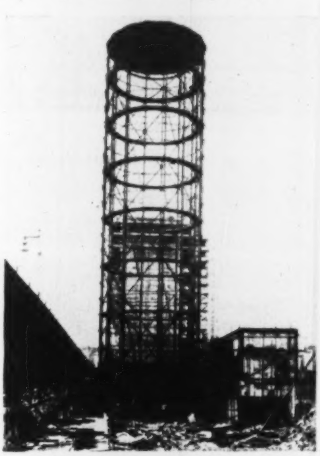
With IIAA, Sterling was one of the first U. S. engineers to go to Latin America to help with the cooperative health and sanitation programs. He served at the start as chief engineer in Paraguay. Later he was chief engineer and associate chief of party in Chile.

Mexico-Acapulco Road

Work has begun on the rectification of the important highway from Mexico City to the Pacific coast resort city of Acapulco.

It is estimated that shortening the highway by eliminating curves and by cuts through the mountains will cost a total of $3,500,00 and will reduce

(*Continued on page 39*)



USING EXHAUST HEAT—Situated near the Battersea power station, dwellings in the Pimlico housing estate of Westminster, London, England, will be heated by exhaust steam and hot water from the power station. A prominent feature of the apartment building will be the tower shown under construction above. When it is completed, this 137-ft. tower will house a container to store 2,500 tons of hot water which will be used to heat the living quarters and supply them with hot water for domestic use. (British Combine photo)

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Tough, weather resistant canvas covers, always ready for instant use, keep your winter work on schedule, help avoid penalties. Tarpaulins are quickly transferred from job to job—easily moved to meet changing protection demands on individual projects.

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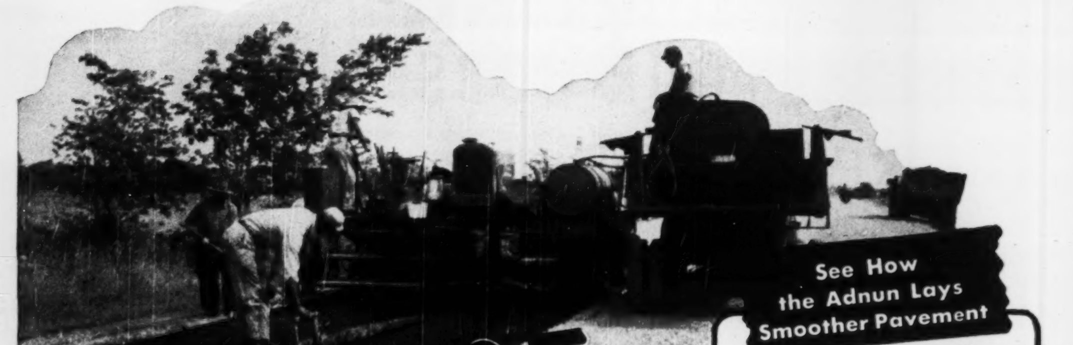
NATIONAL COTTON COUNCIL · MEMPHIS, TENN.



SURFACE ACCURACY

no other method of spreading can equal

Continuous Course Correction — the automatic feature of the Adnun that corrects the irregularities in successive courses of black top pavement is an exclusive Adnun feature.

With the rollers riding on the finished surface and the Cutter Bar set close to the rollers, finished surfaces of unusual smoothness can be laid even with a very rough base and the minimum of advanced preparation.

The danger of "tearing" is reduced by the oscillating, sawing, cutting action of the Cutter Bar and an initial compression results from the bevel design of the tooth. This combined with the Breaker Bar action permits laying the heavier, tougher, cold mixes other pavers find difficult. Full adjustment permits "feathering" edges for widening on crowned surfaces and laying narrow strips. These advantages mean time and money. Don't plan a Black Top Contract without investigating the Adnun.

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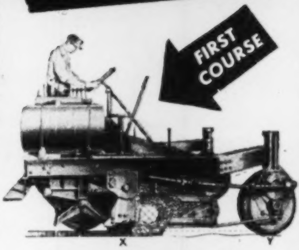
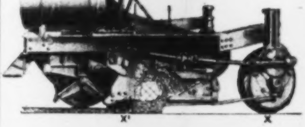
A BLAW-KNOX PRODUCT
FROM FORMS TO PAVER TO FINISHER ALL YOUR PAVING EQUIPMENT
IN ONE PACKAGE from BLAW-KNOX

See How the Adnun Lays Smoother Pavement



Photodiagram of an Adnun Black Top Paver laying the first course over irregularities. For the purposes of illustration, the front wheel has been dropped into a hole the unusual depth of 5 inches. Even a hole this deep causes a deflection at the Cutter Bar (X) of only 3/4 of an inch.



Photodiagram of the second or top course. Here the front wheel of the Adnun has arrived at (X) a drop of 3/4 of an inch. The 3/4 inch hollow will be smoothed completely and an imperceptible ripple of 3/16 of an inch will be left at (X1) in the finished course.

Are you pouring concrete? Ask for a copy of the Booklet, "How Would You Do These Jobs?", on the MultiFoote HighLift Boom.

(*Continued from page 36*)

the 289-mile highway distance between the two cities by 35 miles.

The work will be done in two sections. The first will be financed by the government lending agency, La Nacional Financiera, and that section will become a toll road, the first in Mexico.

The second section, the Chilpancingo–Acapulco rectification—is being done by the Department of Communications and Public Works, and will be a free road.

Power and Irrigation

Korea—Three power projects designed to help meet the serious electric shortage in the Republic of Korea by increasing capacity by 59,400 kilowatts have been approved by the Economic Cooperation Administration. They provide for the construction of two steam power-generating facilities and the completion of the Sumjin Gang hydroelectric development.

Total cost of the three projects is estimated at the equivalent of $17,000,000, including $6,300,000 in ECA dollar assistance for the purchase of equipment.

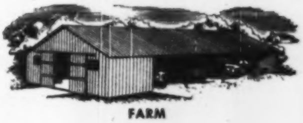
One project is for the completion of the hydro-electric development on the Sumjin River near Chonja which was started in 1942 by the Japanese. It will provide water for irrigation as well as additional power-generating capacity. It is expected that 27,000 acres can be irrigated and 7,000 acres of tidal flats reclaimed.

East Punjab—Work on the Nangal project will be completed in about a year. The head regulator of the 200-mile canal there has been built and a power house is under construction. Preliminary work on the Bhakra Dam has been completed. These two projects are expected to irrigate 6,500,000 acres of land in East Punjab, the Patiala and East Punjab States Union and Bikaner State. In addition, the Nangal project will generate 85,000 kw. of electricity, from which 24,000 kw. will be available to Delhi Province.

Italy—An experimental well-drilling program, financed by Marshall Plan counterpart funds, will soon get under way, the Economic Cooperation Administration has announced.

Thirty million lire (about $48,000) has been allocated from the Italian counterpart fund to drill twelve wells in the Tavoliere Plateau area surrounding Foggia where the U. S. 12th and 15th Air Forces were during the war.

If the initial experiment proves successful, ECA said, it may mean the start of a vast irrigation development in Italy's Apulia region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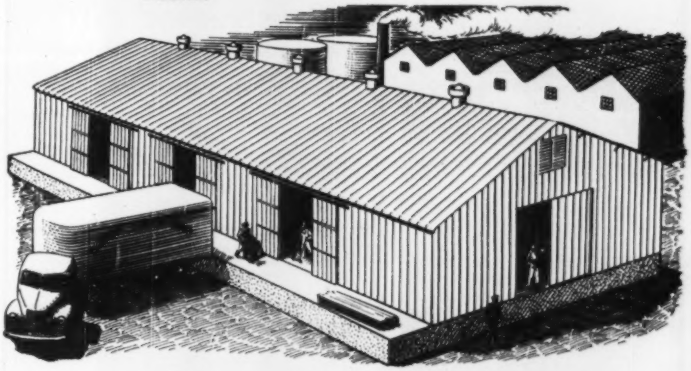

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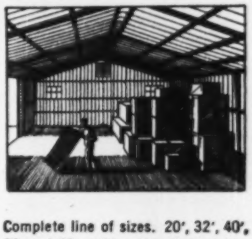

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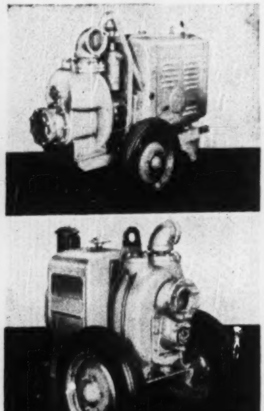

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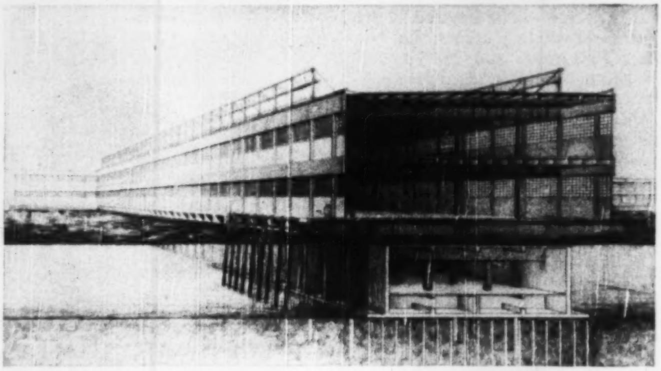


Prestressed girders for new N. Y. pier

Prestressed, precast concrete girders will support a 725-ft. long by 150-ft. wide pier in the North River, New York City—if the War Department approves.

Plans for the structure were announced by Commissioner G. Joseph Minetti of the city's Department of Marine and Aviation. He said the department's engineers had cooperated in the design with E. H. Praeger of Madigan-Hyland, consulting engineers.

The designers call for a pier structure consisting of two, reinforced concrete, hollow boxes, 82 ft. wide, 350 ft. long and 25 ft. deep, placed end to end. Dead load will be equalized by the upward pressure of the water. Live load will be transmitted to 30-in. concrete caissons, spaced 40 ft. apart along the sides of the boxes and supported on rock. The interior of the boxes may be used for storage if required.

The prestressed girders will be placed across the top of the boxes at 20-ft. intervals. Cantilevering to the edge of the pier, they will support the main deck, a 23-ft. deep storage compartment under the deck and a 120 x 700-ft. two-story shed.

General into City Planner

Brig. Gen. John Elliott Wood, retired, who spent most of his life in the Army, now, at 58, is preparing for a new career as city planner, with the aid of college training under the GI Bill.

At present he is a first-year student in city and regional planning at the Harvard Graduate School of Design. Before World War I he received a degree in architecture from Harvard, and later he had one year of graduate work in architecture at M.I.T. He saw combat service with the engineers of the 26th Division in the first world war and went overseas three times in the last war, finally as chief of engineers in the Mediterranean Theater.

Sesquicentennial Report

The city of Schenectady, N. Y., last year celebrated its 150th anniversary as a city. So the annual report of the municipality for 1948 has just been issued in the form of an unusual historical brochure of 28 pages. It is handsomely illustrated with art work and photographs and is called "A governmental review of the city's activities during the year 1948, with some historical observations on city life back in 1798." Continuity is obtained by having a figure representing the spirit of Joseph C. Yates, the first mayor of Schenectady 150 years ago, appear on almost every page to compare the affairs of the little city of the closing years of the Eighteenth Century with those of the big city of the middle of the Twentieth Century. It is a clever idea which holds the interest of the reader throughout.

Municipal Briefs

Street Paving—Toledo, Ohio, will spend upwards of $1,600,000 this year on street paving.

Generous Community—The trustees of the village of Salineville, Ohio, just before Christmas mailed holiday greetings to all water customers, enclosing a receipted December water bill as a gift.

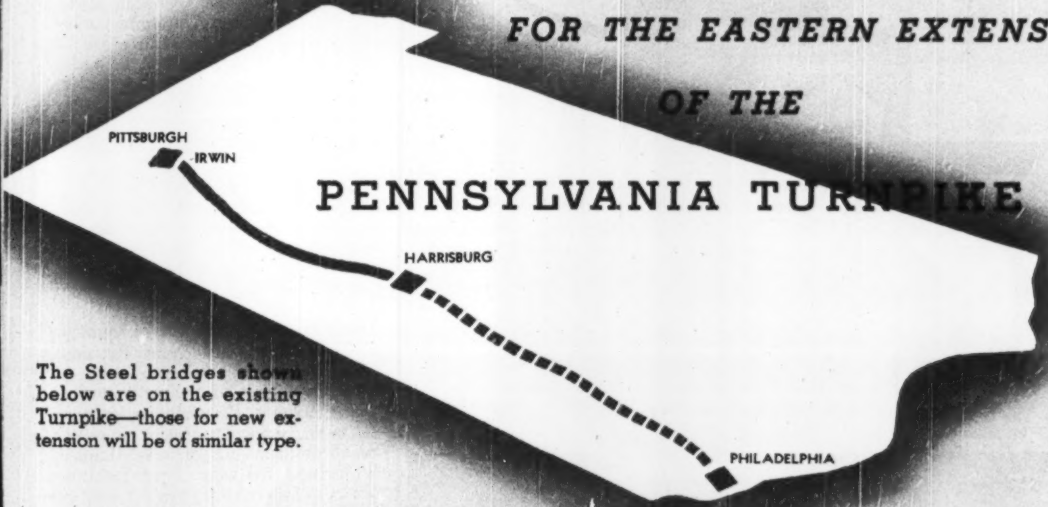
Airport Improvements—Airways Engineering Corp. of Washington, D. C., has been retained as consultants by

(Continued on page 42)

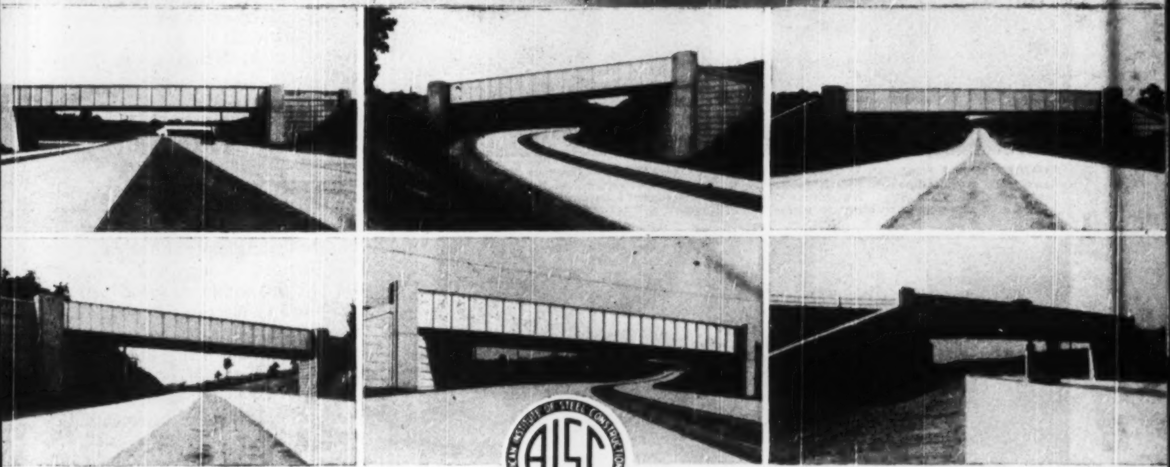
STEEL BRIDGES

FOR THE EASTERN EXTENSION OF THE

PENNSYLVANIA TURNPIKE



The Steel bridges shown below are on the existing Turnpike—those for new extension will be of similar type.



"Steel Permits Streamlining Construction With Safety, Endurance and Economy."

Because of the excellent service records made by the Steel Bridges on the present Pennsylvania Turnpike—when the extension was planned it was decided to again specify STEEL BRIDGES. Many of these, too, will be fabricated by Fort Pitt Bridge.

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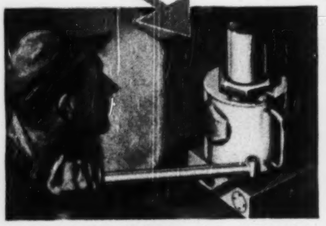
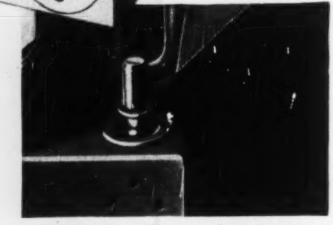
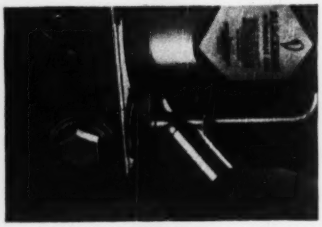
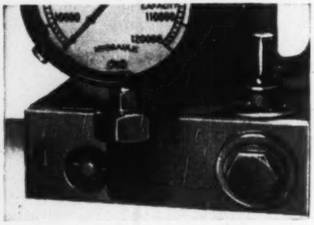

PATENTED DOUBLE PUMP—all in ONE unit! Speed pump provides fast load contact—power pump cuts in automatically! No shifting of handle, no double-yoke as with separate pumps.


EXTRA SAFETY — The pump beam is protected by the handle and base. The pump is protectively hidden in the super-strong base which is machined from a single piece of steel.


ALL-DIRECTIONAL OPERATION — Full power and travel at any angle, vertical to horizontal. The handle serves as a side-rest for horizontal use.


EXTRA UTILITY — A gauge can mount in the base to show pressure exerted for measuring or testing jobs. The answer to weighing vast tonnages and large objects.

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Wayne County, Mich., for the preparation of a new master plan for the development of the terminal area at the Detroit-Wayne major airport.

Uniform Traffic Laws—In Michigan 42 cities have adopted the unified code of traffic law enforcement first drawn up by law enforcement and safety officials in that state about five years ago. There are two main divisions to the system: A uniform traffic ticket, which means uniform enforcement wherever the system is in operation, and a unified court policy, under which the violator is assured of substantially the same treatment before a judge regardless of which city it is.

Big Water Tank—Plans are being made to erect a 2,000,000-gal water tank for Atlanta, Ga., at a cost of $325,000. It will be 108 ft. in diameter, 40 ft. high and mounted on a 100-ft. tower.

Sewer Rental—The Bureau of Municipal Research of Philadelphia, Pa., says that metered sewer rental charges these are higher than in other major cities because Philadelphia finances its entire sewage treatment and disposal program out of sewer rentals whereas in the other cities facilities are provided out of general funds or with federal aid. Philadelphia's rates for this year, based on a five-eights-in. meter, come to $6.08 for 4,000 cu. ft. of water or an average of $1.52 for 1,000 cu. ft.

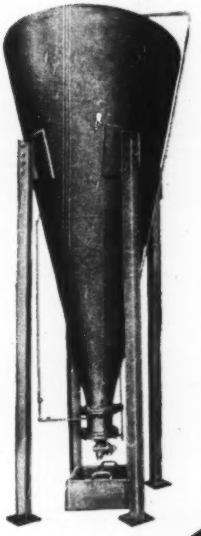
Sewer Improvement—A five-year, $6,000,000 sewer improvement program to relieve major areas in Toledo, Ohio, from storm water flooding has been proposed by B. R. MacRitchie, service director. The relief would come from integrating more thoroughly the now-combined storm and sanitary sewer systems within several city areas. Additional connections between the two systems, estimated to reach 400 in the city, would permit storm water to be handled within a one-hour instead of a five-hour period, thus preventing the flooding of basements.

Smoke Abatement—In his annual report, J. W. Shaw, chief smoke abatement inspector of Detroit, Mich., says that the city is slowly but surely solving its air pollution problem, thanks to the support and cooperation of the general public, industry and property owners. He said that expenditures by industrial plants for fly ash precipitators alone ranged up to more than $100,000 for larger installations. One plant alone will collect 40 tons a day of fly ash now spread over the community through its smoke stacks.

For dependable 8-minute softening use the streamlined Permutit® Spiractor®

Permutit has added new speed to lime treatment. The Spiractor softens water twenty times faster than old style methods and takes up far less space!

FAST but SURE!



The Spirator is sturdy and dependable, operates simply, and requires a minimum of maintenance. Raw water mixed with lime enters at the base of the cone at a velocity high enough to suspend a catalyst bed of calcium carbonate granules, low enough to avoid carry-over. The water softening reaction results in precipitates that are deposited on these granules by accretion. Enlarged granules are drawn off through valve in base—and disposed of as easily as moist sand grains. No messy sludge to get rid of! The softened water, clear and low in alkalinity, is ready for suitable filtration.

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Unusual underpinning job solves settlement problem

Foundation of 10-story building·stabilized with 100-ft.

U·S·S H-BEAM BEARING PILES

During recent alteration work on the ten year old, 10-story reinforced concrete building occupied by the big Chicago store of Carson, Pirie, Scott & Co. it was revealed that 12 supporting caissons designed for support on rock 110 feet below sidewalk were founded in a water-bearing strata 20 feet above rock and under 75 feet of soft to hard blue clay. The resulting progressive settlement and leaning was of such proportions that immediate stabilization was necessary.

Stabilization was obtained by jacking a ring of 100-foot U·S·S Steel H-Beam Bearing Piles around the present columns after excavating only enough to gain necessary head room. These steel piles in welded 8-to 10-foot lengths were jacked until a 220-ton resistance was recorded at an elevation 10 to 15 feet above rock. The additional penetration to rock was made with a 50C Vulcan Hammer finishing with a resistance of 200 to 250 blows per inch at rock elevation.

Concrete caps were poured encasing the "H" piles and gripping the caisson which had been roughened to secure good bond surface. During driving, it was necessary to maintain load of structure on hydraulic jacks supported on adjacent piles which had been jacked. Operations started at basement floor 10 feet below grade and pile caps were poured with bottom elevations 32 feet, 6 inches to 55 feet below sidewalk. All caps were poured with the piles pre-stressed by the building load at basement elevation.

U·S·S Steel H-Bearing Piles again have proved their ability to provide a secure means of supporting foundations through unstable materials, by penetrating to firm strata at great depths. Their capacity for high unit loads permits fewer piles and fewer driving operations for a given load. An inquiry will bring answers to any problems you may have concerning U·S·S Steel Bearing Piles.

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COLUMBIA STEEL COMPANY, SAN FRANCISCO
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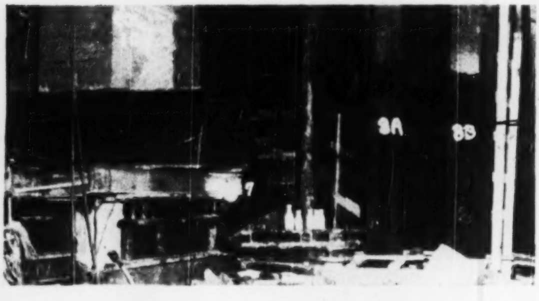
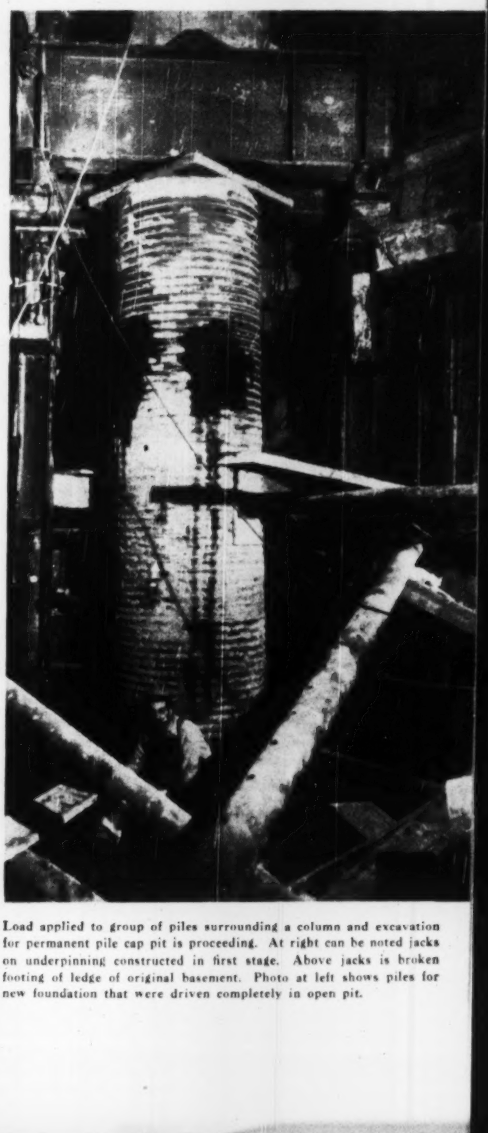
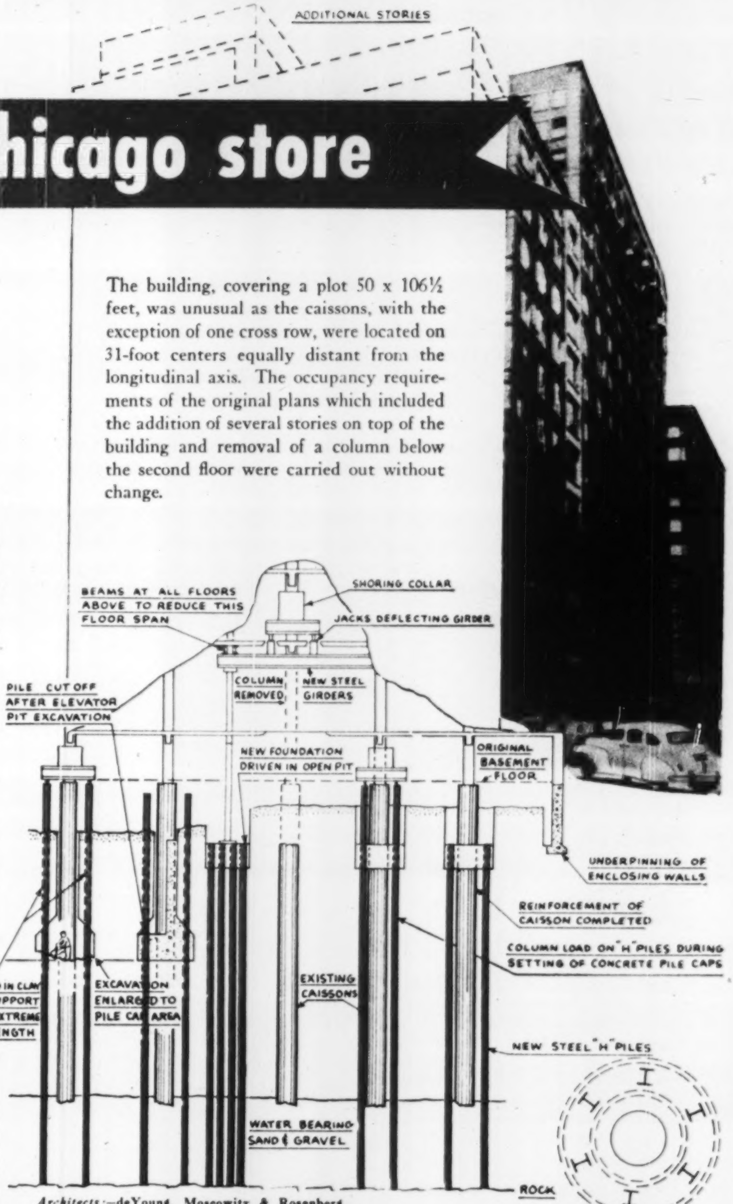
UNITED STATES STEEL EXPORT COMPANY, NEW YORK





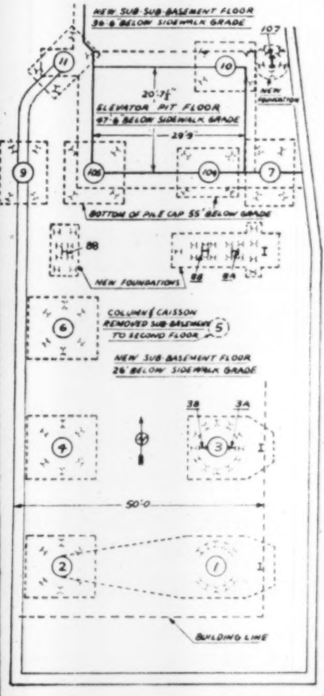
Load applied to group of piles surrounding a column and excavation for permanent pile cap pit is proceeding. At right can be noted jacks on underpinning constructed in first stage. Above jacks is broken footing of ledge of original basement. Photo at left shows piles for new foundation that were driven completely in open pit.

for big Chicago store



ADDITIONAL STORIES
SHORING COLLAR
BEAMS AT ALL FLOORS ABOVE TO REDUCE THIS FLOOR SPAN
JACKS DEFLECTING GIRDER
PILE CUT OFF AFTER ELEVATOR PIT EXCAVATION
COLUMN REMOVED
NEW STEEL GIRDERS
NEW FOUNDATION DRIVEN IN OPEN PIT
ORIGINAL BASEMENT FLOOR
UNDERPINNING OF ENCLOSING WALLS
REINFORCEMENT OF CAISSON COMPLETED
COLUMN LOAD ON "H" PILES DURING SETTING OF CONCRETE PILE CAPS
PILES EMBEDDED IN CLAY FOR LATERAL SUPPORT TO ELIMINATE EXTREME UNSUPPORTED LENGTH
EXCAVATION ENLARGED TO PILE CAP AREA
EXISTING CAISSONS
NEW STEEL "H" PILES
WATER BEARING SAND & GRAVEL
ROCK

The building, covering a plot 50 x 106½ feet, was unusual as the caissons, with the exception of one cross row, were located on 31-foot centers equally distant from the longitudinal axis. The occupancy requirements of the original plans which included the addition of several stories on top of the building and removal of a column below the second floor were carried out without change.



NEW SUB-SUB-BASEMENT FLOOR 36'-6" BELOW SIDEWALK GRADE
107
11
10
NEW FOUNDATION
20'-7½"
ELEVATOR PIT FLOOR 47'-6" BELOW SIDEWALK GRADE
29'-9"
9
105
104
7
BOTTOM OF PILE CAP 55' BELOW GRADE
8B
NEW FOUNDATIONS
8B
8A
6
COLUMN & CAISSON REMOVED SUB-BASEMENT TO SECOND FLOOR
5
NEW SUB-BASEMENT FLOOR 26' BELOW SIDEWALK GRADE
4
3B
3A
3
50'-0"
2
1
BUILDING LINE

Pertinent Information about this Project

Number of caissons reinforced:	11
Number of Steel H-Beams driven on project	92
Length Steel H-Beams piles: (in welded sections of 8 to 10 ft.)	100 ft.
Load capacity of unsupported piles at approximate elevation 10 ft. above rock:	220 tons

Architects:—deYoung, Moscowitz & Rosenberg.
Consulting Engineers:—Seelye, Stevenson & Value.
General Contractors:—George A. Fuller Company.
Underpinning and Foundations:—Gooder, Henrichsen Company, Inc.

STEEL H-BEAM BEARING PILES

UNITED STATES STEEL

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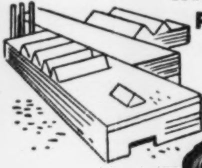

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Series 030-S
Bridge Drain

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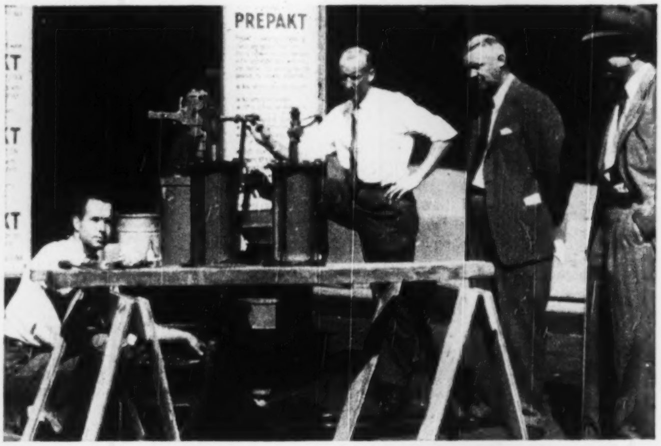
MEN AND JOBS

First assignment of Oregon state sanitary personnel to district health posts, in keeping with a policy to establish direct engineering services has been announced by G. D. Carlyle Thompson, acting state health officer. **Harold W. Merryman** and **Theodore M. Gerow, Jr.,** both sanitary engineers with OSBH, have already assumed their new positions. Merryman is at Pendleton, with the Umatilla County Health Department, and will serve that county and eight others—Baker, Crook, Gilliam, Grant, Malheur, Union, Wallowa and Wheeler. Working with Merryman in this region is **William B. Culham,** district sanitarian. Gerow is assigned at Grants Pass, with the Josephine County Health Department. He will serve eight counties—Josephine, Coos, Curry, Douglas, Harney, Jackson, Klamath and Lake. **Paul R. Howen,** district sanitarian, will work with

DRIVING THE GOLDEN SPIKE—Over 22 miles of Canadian Pacific Railway track had to be relocated along the Ottawa River where Des Joachims Dam will swell the stream into a 1,200,000-acre-ft. pond. Doing the honors with the sledge to complete the work, is Angus A. Richardson, project manager for Ontario's Hydro-Electric Power Commission, while HEPC and CPR men look on.



Robert R. Anderson, field engineer for Intrusion-Prepakt, of Cleveland, stops in New York to demonstrate the principles of flowing grout into previously-placed aggregates. Watching are F. C. Alden, of Prepakt, T. Nilson, engineer, Office of the Borough President of Manhattan, and John C. King, chief engineer for the Prepakt Concrete Co. Mr. Anderson has driven the demonstration unit (rear of truck shown) to the offices of engineers in many parts of the United States.

Gerow in that area upon his return from educational leave Feb. 1.

Harry A. Jones has been appointed city building inspector of Regina, Sask. He was graduated from the University of Saskatchethe in 1927 as a bachelor of science in civil engineering.

H. F. Sommerschield has resigned as structural representative of the Portland Cement Association to enter private practice as a structural engineer at 4617 N. Keating Ave., Chicago 30, Ill.

Herbert M. Bosch, head of the environmental health sanitation section of the Minnesota Health Department, is leaving for Geneva, Switzerland, to be chief of the section of environmental sanitation for the UN World Health Organization.

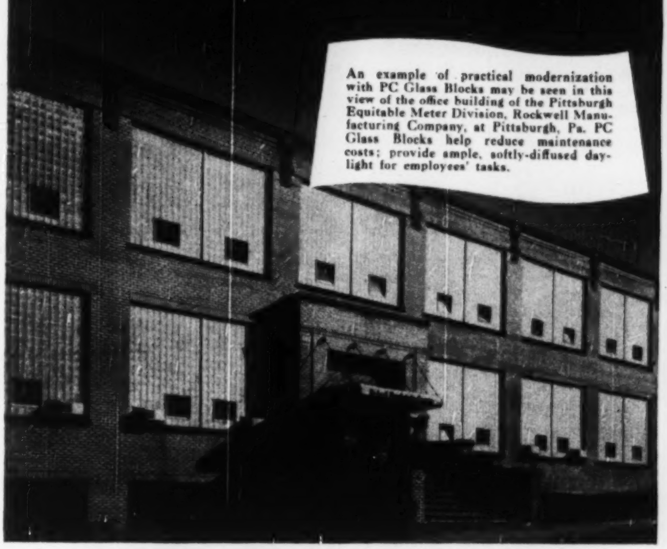
Capt. Ernest T. George, chief of the operations division of the Memphis, Tenn., district, Corps of Engineers, has been transferred to the 3244th Army Service Unit R.O.T.C at The Citadel, Charleston, S. C.

Austin W. Earl, consulting engineer, San Francisco, has formed a partnership with J. G. Wright, and the partnership will continue the general practice of civil and structural engineering under the firm name of Earl & Wright.

In the North Carolina Highway Department, **J. F. Rivens** has been named second district engineer with the Eighth Division, succeeding **C. C.** Ashby, and the district headquarters have been transferred from North Wilkesboro to Elkin. **James Atwell** was retained as maintenance supervisor and **A. G. Justus,** another maintenance supervisor at North Wilkesboro, was added to the Eighth Division's Third District staff at Lenoir. **A. D. Parker** is maintenance supervisor with the Second Division at New Bern, succeeding **N. E. Ward,** and **J. G. Adams** has been added to the Division's Third District staff of Kinston as maintenance supervisor. **P. A. Fulghum** and **J. V. Walters** have been added as maintenance supervisors at Wilson and Bunn, respectively, with the First and Third District staffs of the Fourth Division. **J. A. Kennedy** is acting maintenance supervisor for the Seventh Division's Second District at Albemarle, succeeding **P. W. Griffith,** and **R. C. Holden** has been added as acting maintenance supervisor at Charlotte. **P. S. Troxler** has been added as maintenance supervisor for

(*Continued on page 50*)

What PC Glass Blocks can do in your buildings



An example of practical modernization with PC Glass Blocks may be seen in this view of the office building of the Pittsburgh Equitable Meter Division, Rockwell Manufacturing Company, at Pittsburgh, Pa. PC Glass Blocks help reduce maintenance costs; provide ample, softly-diffused daylight for employees' tasks.

REPLACING old, worn-out or rotted sash in your buildings with PC Glass Blocks offers many advantages. For example, they help regulate temperature and humidity. That's because PC Glass Blocks have more than twice the insulating value of ordinary windows. Panels of PC Glass Blocks stop infiltration of dust and grit. Thus, they help to maintain product perfection and uniformity; eliminate those factors which retard production. Besides, PC Glass Blocks improve a building's appearance. And their light-transmitting properties reduce eye-fatigue; increase workers' efficiency.

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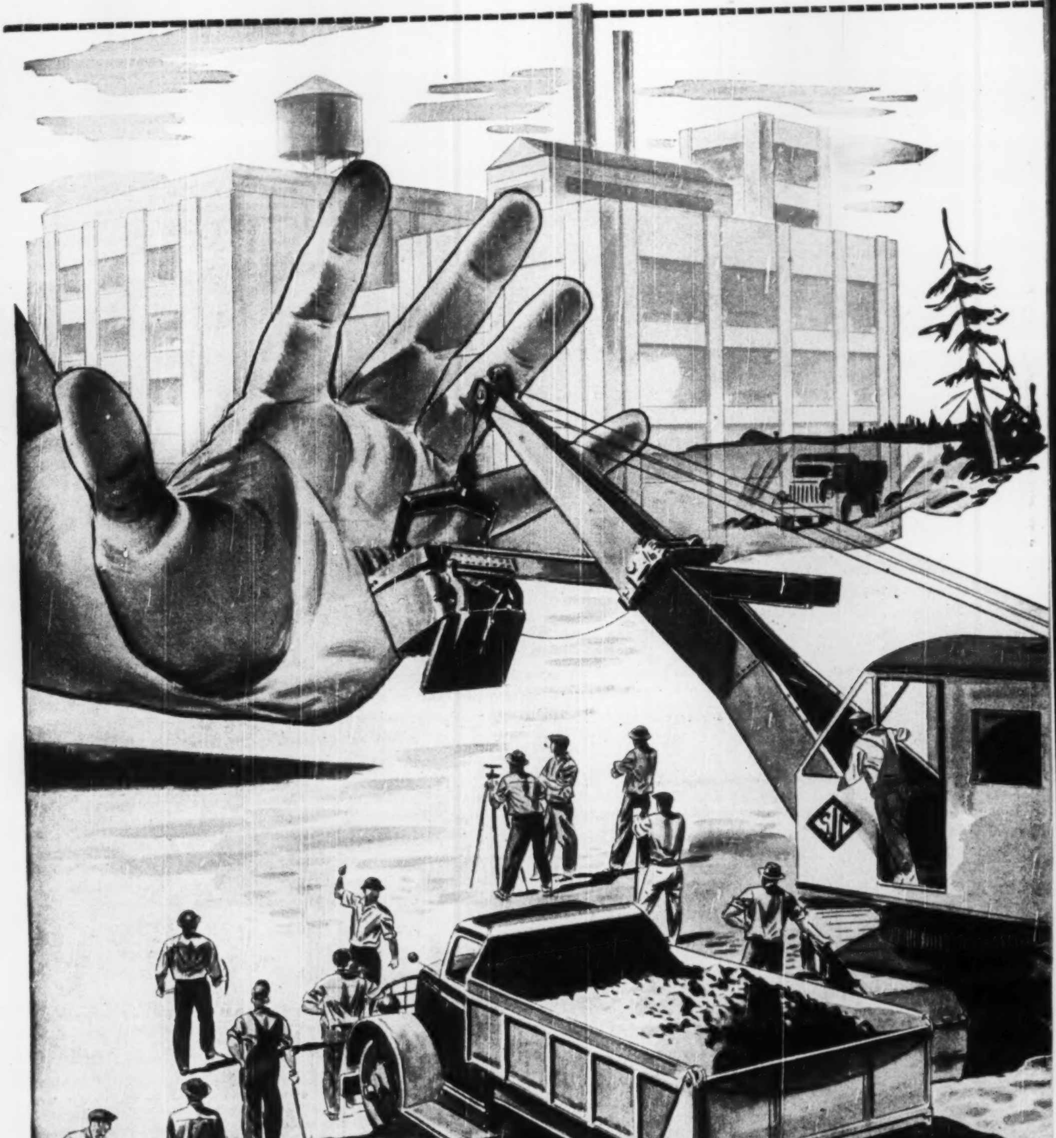

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Whatever the problem—Westinghouse can help you find the "one best" system for the plant you're designing.

Our engineers have worked with *all types* of industries for a good many years. They've found new and better answers to *all* phases of power distribution. Westinghouse offers this co-operation to all architects in getting power to do the best job at the lowest possible cost.

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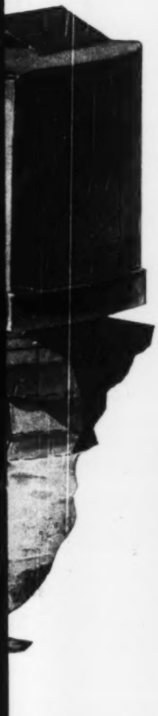

Here's REAL help for your "System Planning"

1. **A New 34-Page Booklet:** "Industrial Plant Distribution Systems" B-4045. Fact-filled pages and colorful diagrams present the basic systems most widely used in Industry today. Find out how to choose the *best system* for the plant you're designing.
2. **System Selector:** A wealth of information condensed to a pocket-sized selector! In a matter of minutes you can make preliminary decisions on the system that answers your requirements.
3. **Color Movie:** Get all the facts visually! This 16-mm, full-color movie is a 20-minute dramatization that will point the way to new economies in plant power distribution. Ask one of our representatives for a free showing of "The Right Power Distribution System". No obligation, of course.

Get this key information on system planning NOW. Call your nearest Westinghouse office. Westinghouse Electric Corporation, P. O. Box 868, Pittsburgh 30, Pennsylvania.

Westinghouse

SYSTEM PLANNING SERVICE

"Courteous treatment by salesmen . . ."

that's only one of the things we mean by Service Plus!

A recent survey of our customers impressed us again with the fact that "a company is only as good as its personnel!" Many customers told us that they like to do business with United States Steel Supply Company because of the courteous attention they receive from our salesmen. We're glad their efforts are appreciated and we assure you that every order you place, large or small, will receive prompt, courteous attention from men who know their business.

Service Plus is our pledge to handle your order as you want it handled. Our capacity to serve you includes a complete range of steel products, an unrivaled reputation for prompt delivery, and years of experience in providing the most complete steel service available.

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UNITED STATES STEEL

(*Continued from page 47*)

the Eighth Division's First District at Walkertown, succeeding Justus, who has moved to Elkin. **B. S. Connelly** has been named maintenance supervisor for the Tenth Division's First District at Asheville, succeeding **H. D. Aiken,** who transferred to the Second Division at Burnsville, succeeding **John W. Ellis** of Heaton and **R. W. Munday** of Burnsville. **G. C. Mauney** of Murphy and **Joe F. Setzer** of Franklin were released in the division's Third District and **John W. Thuss** was added to the Third District as maintenance supervisor at Murphy.

Leslie L. Maxwell of Wilmington, Del., has been named by the Delaware State Highway Department to be division engineer for New Castle County, succeeding **C. C. Reynolds,** division engineer, retaired. Mr. Maxwell, who was maintenance engineer for the county, is a civil engineering graduate of the University of Delaware. He was assistant county engineer in 1945 and 1946.

Mixing-plant log of concrete for Dorena Dam is checked by Resident Engineer W. A. Schwarz, left, and Plant Inspector C. F. Burgoyne. More than 150,000 cu. yd. of concrete are required although the dam is an earth fill. It is part of the Corps of Engineers flood control system for Oregon's Willamette Valley.

Jacob Kaegi, left, head of the department of public Works, Zurich, Switzerland, is in the United States surveying airport installations in view of improvements at Zurich. Here he is shown with Walter Abel, chief engineer and general manager of the Port of Oakland, Calif., while visiting the Oakland Municipal Airport.

A FULL HEAPING LOAD

Every 3 minutes on a 2600-ft. cycle!

That's the production H. B. Adair Construction Company of Gardena, Calif. is getting with two LPC Motor Scrapers of the Delta-Mendota Canal job at Newman. Above—H. B. Adair registers satisfaction.

LaPLANT-CHOATE MOTOR SCRAPERS

A FEW REASONS WHY YOU'LL EARN MORE WITH LPC

- **225 H.P. Buda Diesel**
- **45 H.P. Continental Starting Engine**
- **12 Cu. Ft. Westinghouse Compressor**
- **32 Amp. Autolite Generator**
- **Lipe Rollway Clutch—17"**
- **Fuller Transmission—4A112**
- **4 Wheel Timken-Detroit Air Brakes**
- **Double Acting Hydraulic Steering**
- **Big Capacity—14 yds. struck—17.5 yds. heaped**
- **Positive Forced Ejection plus High Apron Lift**
- **Many Others**

WHEN you want *real* earthmoving performance . . . the kind that rings the bell on the cash box . . . follow the lead of H. B. Adair. Make LPC Motor Scrapers *your* first choice to get more profit per yard . . . per job . . . per year.

Fast loading ability and "boiling" loading action cuts seconds off loading time. Rugged power gives the unit authority to travel at top speed up and down grade in all kinds of material. Over 16 H.P. per struck yard of capacity! Speeds up to 21.2 m.p.h.! It adds up to an extra trip or two each hour . . . production that pays off. Steady, slugging performance, shift after shift, piles up money-making yardage, and keeps a penny-wise eye on production costs.

Ask your nearest LPC distributor about *all* the features that let you move dirt faster, at the lowest possible cost per yard. LaPlant-Choate Manufacturing Co., Inc., Cedar Rapids, Iowa—West Coast Branch, 1022 77th Ave., Oakland, Calif

LaPLANT CHOATE

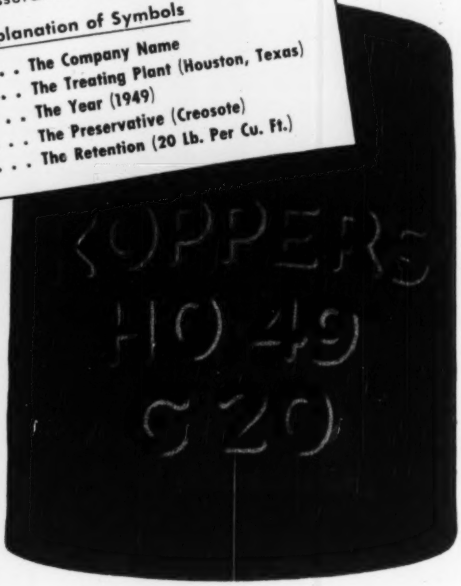
Now—for your protection

--KOPPERS BRANDS
ITS PRESSURE-CREOSOTED PILES!

For your protection, Koppers now burns its brand into every one of its pressure-creosoted piles; this brand is your assurance of quality.

Explanation of Symbols

KOPPERS . . . . . . The Company Name
HO . . . . The Treating Plant (Houston, Texas)
49 . . . . The Year (1949)
C . . . . The Preservative (Creosote)
20 . . . . The Retention (20 Lb. Per Cu. Ft.)



TYPICAL BRAND

KOPPERS Pressure-Creosoted Timber Piles—foundation or marine—provide economical, long-lasting foundations. To these advantages, add the Koppers Brand. The Koppers Brand is placed 10 feet from the butt of each pile; it plainly tells you and your inspector what you are getting in preservative and retention. You can now buy these safe and dependable branded piles.

Prompt Deliveries

Large stocks of Koppers Pressure-Creosoted Piles, in all needed sizes, are carried by Koppers. From its 22 strategically-located Wood-Treating Plants, Koppers can make prompt shipment to any section of the United States.

KOPPERS PRESSURE-TREATED WOOD

KOPPERS COMPANY, INC., Pittsburgh 19, Pa.

OBITUARY

George S. Rice, 83, who pioneered in the study of cause and prevention of coal mine explosions, died Jan. 4 at Takoma Park, Md. A veteran of nearly 30 years' service in the Bureau of Mines, he was its chief engineer and led experiments which ended in the discovery that some mine explosions are due to dust, rather than gas, as had been supposed. He was also instrumental in developing a ventilation system for the Holland Tunnel under the Hudson River, at New York. He had retired on Sept. 30, 1937, but later finished work on an exhaustive report on mining conditions both here and abroad.

Louis E. Robbe, 68, a former civil engineer for New York City for 40 years in the construction of dams, subways and highways, died at Larchmont, N. Y., Jan. 10. He was a M. I. T. graduate.

Otto V. Dobson, 57, construction engineer at Wright Field, died Dec. 29 at Dayton, Ohio.

Carl Eden Carter, 64, of the civil engineering firm of Newell, Carter and Walsh, Portland, Ore., died Dec. 28. He organized the firm in 1910.

Daniel H. McGorrisk, 59, since 1924 an engineer with the George A. Fuller Co., New York, died Jan. 9. He was a graduate of the University of Illinois. In the first world war he was a captain in the Army Engineers Corps. In the last war he was on the Navy's projects near Quonset Point, R. I. With Fuller he had charge of the engineering on the Stevens Hotel and Marshall Field building in Chicago, and the West Virginia capitol.

Frank H. Peters, 58, a civil engineer who had been with the Civil Aeronautics Administration since 1942, died recently in Minot, N. D.

Otto N. Breitag, 64, president of the Louis Brietag and Sons Construction Co., Omaha, died Jan. 1. His firm had built many of the city's public buildings, schools and churches.

William Eastman, 91, construction engineer, died Jan. 3 in Saugus, Mass. He had been associated with the Fitzgerald and the George Macomber Construction companies of Boston. He supervised the construction of the Boston Edison Co., the United Drug buildings, the old South Station and the MDC aqueduct in Worcester.

PUSH .. where it pays!

Oliver "Cletrac" Model FDE Heil Trailbuilder on large land clearing project.

An Oliver "Cletrac" crawler tractor and its Heil dozer puts a big "push" behind any dirt moving job. The extra pushing power you get with an Oliver "Cletrac" permits you to handle bigger loads . . . get the job done faster! Here's why!

With the Oliver "Cletrac" exclusive steering principle, there is always power on both tracks . . . you never have to sacrifice "push" to make a turn. When you pull back on the steering lever, the track on that side slows down, the other speeds up to give you a power turn with plenty of load-handling ability. And, the off-center loads of dozing operations can be handled with no loss of time since the pull of the off-center load can be balanced by speeding up the track on the more heavily loaded side. You don't have to "zigzag" . . . can travel a straight line for most effective dirt moving.

For all the facts on Oliver "Cletrac" tractors and their time-saving, cost-cutting steering, see your Oliver "Cletrac" Distributor.

Cletrac
a product of
The OLIVER Corporation
Industrial Division, 19300 Euclid Avenue, Cleveland 17, Ohio

OLIVER
Cletrac
SALES
SERVICE

"THE SIGN OF EXTRA SERVICE"

A Complete Line of Crawler and Industrial Wheel Tractors

Which of these dredging jobs do you have?

DO YOU WANT TO...

1. Restore eroded beaches?
2. Deepen lakes or channels?
3. Clean out reservoirs?
4. Beautify parks and lakes?
5. Fill in undesirable lowlands?
6. Do any unusual dredging job?

Whatever the job, Morris Engineers study and analyze your needs. They recommend the exactly right dredge. They design, build and install it all ready for operation.

Should your dredging jobs occur in different cities or states, Morris will build a portable dredge. Quickly and easily dismantled, you can move it from place to place at minimum expense.

All dredges are complete with electric motors, Diesel or gasoline engines . . . permanent or portable hull . . . rigging, hoist, spuds, ladder . . . ladder head and any of various cutters . . . piping and fittings. Morris will also furnish an operator, if necessary, for an initial period of time until your own operator learns how to operate and maintain the dredge.

The Midwest Dredging Company Dredge—one of the newest Morris Installations.

ORDER NOW! If you need your dredge in the Spring, now is the time to order it. Write for free bulletins today!

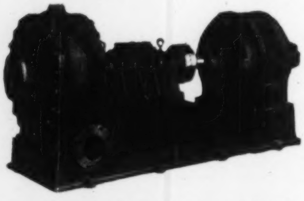
FOR MORE THAN 87 YEARS, Morris has built dredges and dredging machinery for almost every requirement.

Lined Material-Handling Pumps

Specially built for handling highly abrasive materials. Does not have sectional liners or bolt heads to wear out.

Sand, Gravel and Dredging Pumps

Built in standard, medium duty and extra heavy types, in sizes from 4" to 48", with electric motor, steam, Diesel or gasoline engine drive.



MORRIS MACHINE WORKS
Baldwinsville, N. Y.
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MORRIS *Centrifugal Pumps*

Elections and Activities

Delegates to the recent convention in San Francisco of the National Association of Professional Engineers, Architects and Scientists re-elected all officers except Director Ralph Hutchinson, Sacramento, Calif., who was replaced by O. E. Buckius, also of that city. Re-elected were Sterling S. Green, president, Los Angeles; Oscar Goldman, vice-president, San Francisco; Donald Slawson, secretary-treasurer, Portland, and Dick Henning, director, Seattle.

Robert Lathrop has been elected president of the Illinois Association of County Superintendents of Highways. Other officers, S. W. Carlson, vice-president; and G. C. Miller, secy.-treas.

Home Builders Association of Fort Wayne, Ind., has elected Dale E. Fisher president; Robert J. Allen, vice-president; and Herbert C. Beberstein, secretary-treasurer. George A. Poag was named representative on the board of directors of the national association.

A. J. Baltes, A. J. Baltes, Inc., Norwalk, was elected president of the Ohio Contractors Association. Ralph O. Perrott, Jr., Ohio Engineering Co., Lorain, was elected vice-president and Charles E. McKee was reappointed secretary-treasurer. Four new trustees elected for a three-year term are: V. N Holderman, V. N. Holderman & Sons, Inc., Columbus; Paul F. Hollinger, Hollinger-Davidson Co., Akron; Harry B. Fenton, Fenton Construction Co., Ashland, Ohio, and Harley E. Calvin, Harley E. Calvin, Inc., Marietta, Ohio.

MAJOR MEETINGS

National Crushed Stone Association, convention and exhibit, Stevens Hotel, Chicago, Ill., Jan. 29-Feb. 2.

Midwest Materials Handling Conference, Technology Center, Illinois Institute of Technology, Chicago, Ill., Jan. 30-Feb. 1.

Association of Asphalt Paving Technologists, annual business meeting, Statler Hotel, St. Louis, Mo., Feb. 6-7.

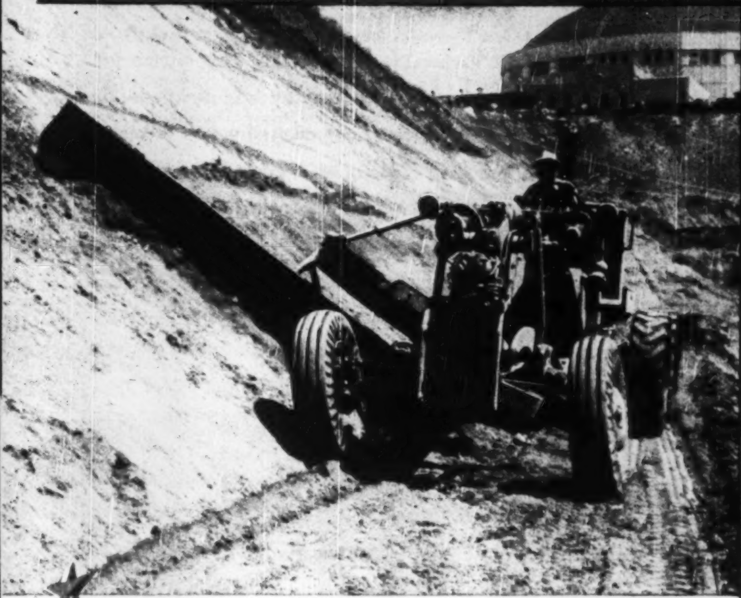
National Association of Home Builders, Congress and Stevens Hotels, Chicago, Ill., Feb. 19-23.

American Concrete Institute, annual convention, Edgewater Beach Hotel, Chicago, Ill., Feb. 20-22.

National Council for Stream Improvement, annual meeting, Waldorf-Astoria Hotel, N. Y. City, Feb. 20-22.

Minnesota Federation of Engineering Societies, exposition, Minneapolis Armory, Minneapolis, Minn., Feb. 21-23.

Adams ALL STAR MOTOR GRADER TEAM



Model 610—100 H.P. Diesel Engine—Weight up to 27,000 lbs.

A Machine Exactly Right in Size, Power and Capacity for Every Grading Need.

From the big extra-heavy-duty Model 610, with 100 H.P. Diesel engine, to the general utility Model 201, with 31 H.P. gasoline engine, all Adams Motor Graders are of the same proved design—all capable of the same wide range of work, in proportion to size and power.

Big operator or small—highway official or contractor—you'll find in the *All-Star* Adams team a machine exactly right for your needs or budget—a machine built to deliver the fastest, most efficient and economical performance you've ever known. See your near-by Adams dealer.

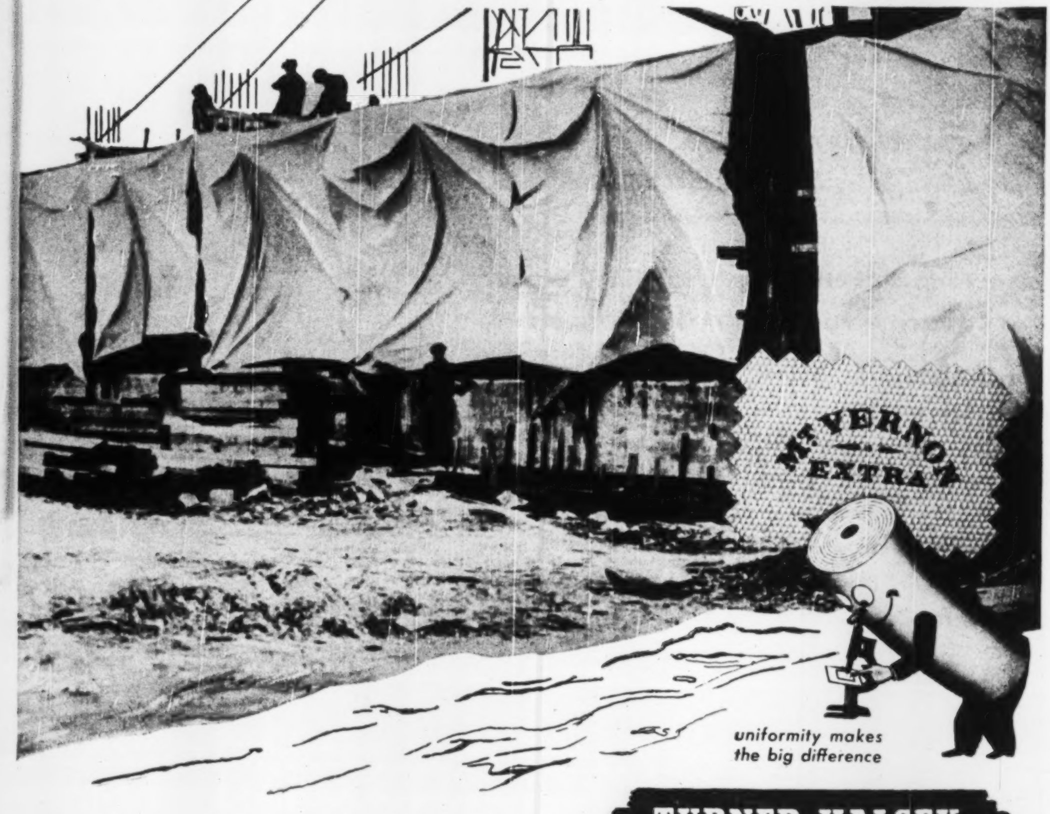
J. D. ADAMS MANUFACTURING CO., • INDIANAPOLIS, IND.

Make your next motor grader an **ADAMS**

Tarps that Stay on the Job

Tarps made of Mt. Vernon Extra duck really *stay* on the job. They give the same efficient protection day after day under the most punishing kind of service conditions. And there's months of extra wear built into tarps made of Mt. Vernon Extra. It's all in the way Mt. Vernon is made—from top grades of cotton, under rigid laboratory controls, to a high degree of uniformity that means consistent performance.

For tarps that give you the most in protection, that cut your repair and replacement costs, specify Mt. Vernon Extra.



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UNIT PRICES BID BY CONTRACTORS

Primary sewage treatment plant bids at Waterbury, Conn. include sludge filters

Eleven bids on the 15-mgd primary sewage treatment plant were received Dec. 19, 1949, by Waterbury, Conn., Henry C. Whitlock, city engineer, Malcolm Pirnie Engineers, New York City, consultants. Contract has been awarded to F. H. McGraw & Co., the the low bidder, at $824,282. The high bid, $1,083,224, is 32 percent above the low.

Work includes construction of a screen and grit chamber with superstructure and attached garage, a pump and service building, three primary settling tanks, a sludge filter building, sludge storage tanks with superstructure, a chlorine building and attached service garage and furnishing and installing miscellaneous connections, piping, equipment and electrical work.

The combined cube of the buildings is 199,500 cu.ft. Lump sum alternate bids were taken which 87.4 cents per cu. ft. for the poured concrete roof alternate, 85 percent per cu. ft. for the pre-cast slab alternate. Contract was awarded on the latter. Alterlump sum bids were also taken on sludge filters where A, B & C indicate different manufacturers.

Class A concrete requires 1.7 bbl of cement per cu yd, class B concrete, 1.25 bbl. All materials and equipment will be supplied by the contractor at the prices shown.

Wages prevailing in the area include: carpenters, $2.12½ per hr.; reinforcing steel workers, $2.50; plumbers, $2.25; electricians, $2.25; laborers, $1.55 per hr.

Work is to start immediately and be completed in a year. The lump sum bids account for 61.1% of the contract and are shown as percent of total contract, in the following analysis, separate from the unit prices. Bidders include:

1. F. H. McGraw & Co., Hartford, Conn., (contract)	$ 824,282
2. C. W. Blakeslee & Sons, Inc., New Haven, Conn.	851,741
11. Terminal Constr. Corp., Wood-Ridge, N.J. (high)	1,083,224

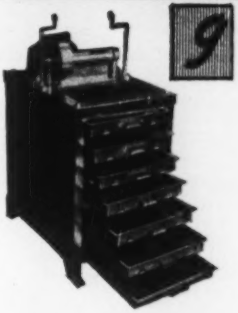
Item		Quantity	Unit Prices 1	Unit Prices 2	Unit Prices 11
Earth excav	cy	15,000	$2.92	$2.60	$6.85
Rock excav	cy	600	6.71	12.00	40.00
Fill from borrow	cy	5,000	1.52	1.00	2.00
Rip-rap	sy	500	3.33	8.00	6.25
Top soil	cy	2,500	2.30	3.75	3.00
Grassing	sy	9,000	0.19	0.19	0.20
Remove exist msry.	cv	100	44.71	5.00	25.00
Granite curb	lf	3,000	3.09	2.50	2.50
Concr sidewalk	sv	100	5.83	4.05	6.75
Bit macad rdwy	sy	4,000	3.08	1.85	3.50
Cl "A" concr	cy	3,800	36.72	42.50	55.00
Cl "B" concr	cy	50	25.32	35.00	50.00
St rein.	lbs	400,000	.094	0.10	0.14
18" RCP	lf	120	2.50	2.50	3.35
42" RCP	lf	75	13.45	14.00	15.81
60" RCP	lf	230	25.91	23.00	35.36
6" VTP	lf	300	1.34	0.75	2.00
8" VTP	lf	200	1.73	1.00	2.50
B & S ci pipe	ton	55	188.93	217.00	196.00
B & S ci ftgs	ton	10	429.60	700.00	490.00
Fl ci pipe & ftgs	ton	35	543.00	510.00	445.00
Misc st & ci	lbs	14,000	.265	0.40	0.40
Cop & silcn bmz	lbs	2,300	1.53	1.20	1.50
Misc wood work	Mbf	10	100.00	700.00	550.00
Graded sand & gravel drain	cy	150	4.33	2.00	5.00
% of total contract			38.9%	40.5%	46.0%

Item	Lump sum prices 1 $	1 %	2 $	2 %	11 $	11 %
Valves & slce gates	13,594	1.7	16,600	1.9	15,840	1.4
Misc alum wk	6,220	0.8	5,250	0.6	14,175	1.3
Grit remov equip	8,387	1.0	8,200	0.9	8,195	0.7
Screenings, grinder	5,938	0.7	5,750	0.7	6,132	0.5
Sludge remov equip	33,400	4.1	33,000	4.0	35,845	3.3
Sludge & recip pumps	6,741	0.8	6,600	0.8	6,670	0.6
Sewage & sump pumps	27,798	3.4	34,750	4.1	36,366	3.4
Sludge filters, A	51,032*	6.2	45,900	5.4	60,575	5.5
B	(57,208)		(50,835)		(62,405)	
C	(59,970)		....		(61,625)	
Sludge drying equip	74,923	9.1	73,600	8.7	70,662	6.5
Sludge filter bldg elevator	9,709	1.2	9,600	1.1	9,593	0.8
Chlorinating systems	20,936	2.5	22,300	2.6	20,428	1.9
Crane, monorails, cl cyl supports	3,612	0.4	6,650	0.8	4,730	0.4
Sewage flow meter & gauge	1,403	0.2	1,750	0.2	1,655	0.1
Ventilating fan system	2,821	0.3	3,115	0.3	3,715	0.3
Superstructures - pour concrete roof, A.	(174,440)		(174,344)		(210,622)	
pre-cast slab B	169,265*	20.5	167,821	19.7	208,988	20.0
Laboratory furniture	3,438	0.4	3,555	0.4	4,510	0.4
Heating systems	26,691	3.2	25,150	2.9	31,020	2.8
Electrical work	38,190	4.6	37,300	4.4	45,309	4.1
% of total contract		61.1%		59.5%		54.0%

* Contract awarded on this alternate

%—of total contract for project.

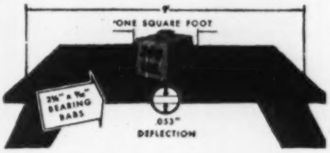
GILSON
Mechanical
Testing Screen



Makes test quickly and accurately
Two to seven separations simultaneously
Screen trays independently removable
Trays balanced to same tare weight
Visible separation to refusal
Few moving parts
Sturdy construction
Size range 4" to 200 mesh
Screen trays available with either square or round openings.

GILSON SCREEN CO.
BOX 186 MERCER, PENNA.

For STRENGTH specify
TRI-LOK
RECTANGULAR
OPEN STEEL FLOORING



The locked-in strength of Tri-Lok enables it to stand up under heavy loads—even on long spans. No rivets, bolts, or welds are used in the construction of Tri-Lok; this feature eliminates the possibility of loose joints.

Tri-Lok is also available in Diagonal, or Super-Safety U-type Flooring, and in Stair Treads of all types. Write for Bulletin KK 1140.

DRAVO CORPORATION
National Distributor for the
Tri-Lok Company
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in Principal Cities

CONSTRUCTION REPORTS

Bids Asked—Low Bidders—Contracts Awarded

Compiled by Business News Department—Engineering News-Record, 330 W. 42nd St., New York 18, N. Y.

ELSIE EAVES, Manager — *J. A. MAHONEY, Reports* — *M. R. ROESSLER, Statistics*

WATER SUPPLY

BIDS ASKED

Kan., Hays—B.A. 2/1—City, Victor Wells, clk., Hays, WW. imprvs., incl. 3 story, 76x92 ft. brick, masonry, water softening plant; three 10x16 ft. brick, masonry well houses; one 12x12 ft. brick, masonry, chlorinator bldg.; one 15x28 ft. brick, masonry booster station; 1,000 cu. yd. rein.-con., 50 tons reinforcing steel, 45 tons structural steel, 200 tons c.i. pipe and fittings, etc. Plans deposit $20. Wilson & Co., 223 North Santa Fe St., Salina, engrs. CD 9/22/48.

Pa., Southampton—B.A. 2/1—Upper Southampton Municipal Auth., Southampton, water lines, appurtenances. Approx. $28,000. Albright & Friel, Inc., 121 S. Broad St., Phila., engr. CD 5/9/47.

Tex., Waco—B. A. 2/9—City, c/o Hubert Davis, water supt., Waco, water imprvs., incl. Contr. 1, filter plant imprvs., appurtenances; Contr. 2, elevated steel wash water tank; Contr. 3, furnish wash water plant. $65,000. Plans deposit $15. Joe J. Rady, 811 Insurance Bldg., Fort Worth, engr. CD 7/23/48.

LOW BIDDERS

Calif., Antioch—City, City Hall, Jan. 9, WW addns., incl. pump. station, new inlet-outlet tower, waterline, etc., from Stanley H. Koller, 1694 Pomona St., Crockett, **$40,920**.

Calif., San Diego—City Council, Civic Center, Jan. 10, Bayview Reservoir, incl. 30,800 cu. yd. excav., 25,300 cu. yd. embankment, 73,000 sq. ft. concrete roof, 78,000 sq. ft. concrete lining, from C. B. Saunders, 4473 Felton St. **$187,487**. Est. over $50,000 CD 12/20.

▲ **N. Y., New York**—Bd. Water Supply, 120 Wall St., Jan. 17, completing construction Downsville Dam of Pepacton Reservoir and construction waste weir, weir channel and waste channel of that reservoir, release water chamber and tunnel and appurtenances of these structures, incl. closure of existing diversion tunnel and final grading in vicinity of the dam, near village of Downsville, town of Colchester, Delaware Co., Contr. 401, from Carlo Bianchi & Co., Inc., 24 Union Ave., Framingham, Mass., Central Constr. Co., 6 Beacon Ave., Lawrence, Mass., Monroe Langstroth, North Adams, Mass., G. L. Rugo & Sons, Inc., 80 Boylston St., Boston, Mass., **$17,902,275**. CD 12/21.

Tex., Dallas—City, City Hall, Main and Harwood Sts., Jan. 12, watermains, Preston Hollow area, from Bishop & Lock, 409 Magnolia Bldg. **$37,359**. CD 12/1/48.

Tex., Lubbock—City, Jan. 12, WW imprvs., pipe lines, etc., laterals, manholes, appurtenances, from R. B. Hodgson, 1005½ 13 St. **$238,765**. Est: $60,000. CD 12/30.

Tex., Midland—City, Jan. 6, c.i. watermain extens., incl. 11,610 lin. ft. 12 in., etc., pipe from M & N Constr. Co., Hobbs, N. M., **$15,419**, materials by owner, **$18,100**, total $34,519. Est. $30,000. CD 12/7.

CONTRACTS AWARDED

Ark., Batesville—General Waterworks Corp., Pine Bluff, exten., imprv. water sys. at Batesville, day labor. CD 5/23/47.

Ia., Clear Lake—City, R. C. Ingersoll, clk., 500,000 gal. elevated steel water storage tank, to Pittsburgh-Des Moines Steel Co., 1015 Tuttle St., Des Moines, **$63,980**. Bids 1/5. CD 12/21.

Ky. Benton—Commonwealth of Kentucky, Frankfort, WW. extens., Kentucky Lake State Park, to Hall Perry, Benton, **$64,598**. Est. $75,000.

▲ **La., Lafayette**—City, WW. main extens. incl. mains, water service connections, installing meters, WW. sys. alterations, to Blythe Bros. Co., P. O. Box 989, Charlotte, N. C. **$1,380,843**. Bids 1/6, awarded 1/11. CD 1/11, under LB.

La., Opelousas—City Council, water treatment plant addns., alterations, to Barnet Brezner, P. O. Box 654, Alexandria, **$83,400**. Bids 1/10, awarded 1/11. CD 12/30.

N. C., Lincolnton—Town, L. D. Warlick, mayor, Lincolnton, water and sewer imprvs., to Reed & Abee, Inc., Asheville, **$119,793**. Bids 12/21 CD 1/3, under LB.

Tex., Galveston—Galveston County Water Control Imprvt. Dist. 11, c/o Roy R. Burkett, pres., Galveston, Jan. 9, WW and sanitary sewers, to Gerald Mora, 312 Sabine St., Houston, **$252,770**. CD 12/20.

Tex., South Houston—Town, WW imprvs., lines, storage, own forces. Approx. **$40,000**. Frank J. Metyko, Scanlan Bldg., Houston, engr.

Tex., Waco—City, c/o mayor, Waco, watermains at 10 and Duttan to Loop Hy. on La Salle, Contr. 3 to J. D. George Co., Amicable Bldg., **$31,076**. Est. $35,000. Awarded 1/11. Joe J. Rady, 811 Insurance Bldg., Fort Worth, engr. CD 7/23/48.

Tex., Wharton—City, Frank Haines, mayor, Wharton, WW extens. for Wharton Junior College, Purchase and Hire. Approx. **$30,000**. Wyatt C. Hedrick, 5201 Fannin St., Houston, engr.

Que., Gaspe—Municipality, water sys., etc., to A. Bedard, 136 St. Patrick St., Quebec City, **$300,000**. S. Langlais, 105 Mountain Hill, Quebec City, engr.

SEWERS, WASTE DISPOSAL

BIDS ASKED

N. Y., Monticello — B.A. 1/30 — Village Clerk, Rire House Bldg., Prince St., sewage treatment plant. Plans deposit $10. Olney Borden, 100 Dwyer Ave., Liberty, engr. CD 6/16.

Ia., Carter Lake—B.A. 2/1—City, Don R. Hill, clk., sewers, pump. station. $129,491. Henningson Eng. Co., Standard Oil Bldg., Omaha, Neb., engr.

Tex., Fort Worth—B.A. 2/2—City, W. O. Jones, city mgr., City Hall, sanitary sewers Glen Garden Addn. $120,000. Plans deposit $5. Carter & Burgess, 401 Century Bldg., engrs. CD 2/4/49.

Mo., Kirkwood (St. Louis 22, P. O.—B. A. 2/9—City of Kirkwood, Wm. Mason, clk., 139 S. Kirkwood Rd., Sugar Creek Sewage Disposal Plant 2, with necessary equip., auxiliaries, appurtenances, on Homan tract near Highland Ave. and Daughterty Ferry Rd. $200,000. Plans deposit $25. Extended date CD 10/31/49.

Minn., St. Paul—B.A. 2/14—Minneapolis-St. Paul Sanitary Dist., P. O. Box 3598, Childs Rd., Zone 1 furnishing, installing 1 multiple-hearth type sewage sludge incinerator, appurtenances. Approx. $145,000. Kerwin L. Mick, ch. engr. and supt. CD 9/13/49.

LOW BIDDERS

Calif., Long Beach—Los Angeles Co. Sanitation Dist. 3, 1206 S. Maple Ave., 9,354 ft. 36-to 51-in. rein-con. pipe lakewood Trunk Sewer, Sect. 1, from Artukovich Bros., 7320 N. Atlantic Ave., Paramount, **$94,435**. Bids 1/11. CD 12/23.

▲ **Calif., San Francisco**—Dpt. P. W s., City Hall, Jan. 10, Southeast Sewage Treatment Plant, Spec. 20,600, from Walsh Constr. Co., 785 Market St., Bates & Rogers Constr. Corp., 209 Post St., and J. H. Pomeroy & Co., 333 Montgomery St. **$2,132,118**. CD 11/21.

Tex., Lubbock—City, City Hall, Jan. 12, Div. II, sewage treatment plant addns., from Wyche & Bruce Constr. Co., P. O. Box 639, Grapevine, **$295,000**, est. $550,000, CD 12/29; Div. 3, 6 sludge beds, wid'n emergency channel, flumes, from Elliott Taylor, Lubbock, Est. **$50,000**. H. N. Roberts & Assoc., 1310 Avenue Q, engrs.

CONTRACTS AWARDED

Ala., Cullman—City, sewage disposal plant, day labor, **$100,000**. O'Toole Eng. Co., Watts Bldg., Birmingham, engr.

Calif., Mariposa—Mariposa Public Utility Dist., Box 15, dam, spillway and outlet works on Stockton Creek, near here to Nevada Constr. Co., Box 2104, Las Vegas, Nev., **$89,985**. CD 1/3, under CA.

Okla., Sayre—City, sewage disposal plant, to Lippert Bros., Inc., 2800 N. Santa Fe St., Oklahoma City, Zone 5, Approx. **$150,000**. Bids 1/9. CD 12/5.

Okla., Sayre—City, sanitary main and outfall sewers, to Asplund Constr. Co., Enid. **$133,110**. Est. $160,000. Bids 1/9. CD 12/5.

Pa., Phila.—Dpt. P. Wks., City Hall Annex, Northeast Treatment Works, Contr. SE 143, electrical work, to W. V. Pangborne & Co. Inc., 1927 W. Montgomery Ave., **$146,703**. Bids 12/30. CD 12/22.

Tex., South Houston—Town, sanitary sewers, own forces. Approx. **$62,000**. CD 8/21 47.

PROJECTS COVERED

Projects—By Size

Construction projects here reported cover the United States and Canada, are of these minimum sizes or larger: water supply, earthwork, waterways $28,000; other public works $50,000; industrial buildings $68,000; other buildings $250,000.

Classes of Construction

(Name in order of Listing)

Water Supply
Sewers, Waste Disposal
Bridges
Streets & Roads
Earthwork, Waterways
Latin America
Public Buildings
Commercial Buildings
Industrial Buildings
Unclassified

Stages Reported

PROPOSED WORK: Including appointment of engineers or architects.

BIDS ASKED (new announcements only). For full calendar, see also preceding issues of ENR.

LOW BIDDERS: On jobs below $500,000 value all low bidder news will be the final reports published on the projects involved except where award is not made to the low bidder. In this case a supplementary contract award report will be published.

CONTRACTS AWARDED: Except awards to low bidders previously reported in low bidder stage.

Dates shown are of issue in which last previous report was published.

Symbols and Abbreviations Include:

†	Federal Government
▲	Project of $1,000,000 or over.
B.A.	Bids Asked
ENR	Engineering News-Record
CD	Engineering News-Record Construction Daily

BRIDGES

BIDS ASKED

† **Louisiana**—B.A. 2/6—U. S. Eng., foot of Prytania St., New Orleans, Zone 9, 195 ft. treated timber bridge, over Bayous Rapides, Boeuf and Cocodrie Diversion Channel, Reach No. 5, approx. 4 mi. northwest of Lamourie, in Rapides Parish, CIVENG-16-047-50-200.

New Jersey—B.A. 2/7—New Jersey Turnpike Auth., 65 Prospect St., Trenton, Zone 8,

Middlesex Co.—Contr. 4, four concrete piers and two abutments, with necessary excav., cofferdams, fender system etc. in substructure for Turnpike Bridge over Raritan River. Plans deposit $15. Fay, Spofford & Thorndike, 11 Beacon St., Boston, Mass., and 25 Livingston Ave., New Brunswick, engrs.; adv. ENR 1/26. CD 7/13, under Streets, Roads.

† **Wyoming and Nebraska**—B.A. 2/9—Bureau Reclamation, Dpt. Interior, Casper, Wyo., repairing timber bridge across North Platte River at Whalen, Wyo., North Platte Proj., Spec. VII-104., adv. ENR 1/26.

† **Louisiana**—B.A. 2/16—U. S. Eng., foot of Prytania St., New Orleans, Zone 9, 2 treated timber bridges, 170 and 187 ft. long, over Bayous Rapides, Boeuf and Cocodrie Diversion Channel, Reach 5, approx. 3 mi. west of Lamaurie, la., in Rapides Parish, CIVENG-16-047-50-199.

Louisiana—B.A. 2/16—U. S. Eng., foot of Prytania St., New Orleans, Zone 9, 195 ft. treated timber bridge, over Bayous Rapides, Boeuf and Cocodrie Diversion Channel, Reach No. 5, approx. 4 mi. northwest of Lamourie, in Rapides Parish, CIVENG 16-047-50-200, Extended date. CD 1/16.

LOW BIDDERS

New Jersey—State Hy. Dpt., Trenton, Jan. 12, Manasquan River bridge approaches and Ashley Avenue Bridge, Rt. 34, Sect. 40B, Proj. U-59 (5), Brielle-Point Pleasant Beach, Monmouth and Ocean Counties, from Lugano Brothers, Inc., 172 Passaic Ave., Belleville, **$622,322**. CD 12/28.

CONTRACTS AWARDED

Calif., Los Angeles—Los Angeles Co., 501 Hall of Records, rein.-con. bridge and steel stringer-timber deck bridge over Los Angeles River, at Imperial Hy. South Gate, Los Angeles Co., to John Strona, 1538 Philadelphia Ave., Pomona, **$502,567**. Bids 11/15, awarded 1/3. CD 11/23, under LB.

▲ **N. Y., New York and Brooklyn**—Dpt. P. Wks., municipal bldg., New York, Zone 7, reconstruct suspended spans of Brooklyn Bridge over East River, alternate 1, entire proj., to J. K. Welding Co., Inc., 71 Paidge Ave., Brooklyn, Zone 22, **$3,317,537**. Bids 11/7. CD 11/10, under LB.

Washington—State Hy. Dpt., Olympia, rein.-con. girder bridge across Palouse River, Whitman Co., to J. A. Clawson, Twin Falls, Idaho, **$63,701**. Bids 1/10. CD 12/29.

Ontario and New York—Peace Bridge Comn., Fort Erie, Ont., bridge imprvs. Canadian approach to Buffalo, N. Y. and Fort Erie, Ont. Peace Bridge over Niagara River, to A. R. McGlashan, 49 Princess St., Fort Erie, Ont. Approx. **$150,995**. W. L. Somerville, 1104 Bay St., Toronto, Ont. archt.

STREETS AND ROADS

BIDS ASKED

†**D. C., Wash.**—B. A. 2/1—Bureau Public Roads, Columbia Pike, Arlington, Va., c. conc. 0.096 mi. Madison Dr. between 7 and 9 Sts. N. W., for National Capital Parks. **Plans deposit $10. H. J.** Spelman, div. engr.

New Jersey—B. A. 2/7—New Jersey Turnpike Auth., 65 Prospect St., Trenton, Zone 8,

Salem and Gloucester Counties—Contracts 3, 3A and 3B, incl. grading, drainage structures, etc. in connection with constr. of New Jersey Turnpike, Sect. 1, between Deepwater and Woodbury. Plans deposit $15. Fay, Spofford & Thorndike, 11 Beacon St., Boston,

(Continued on page 60)

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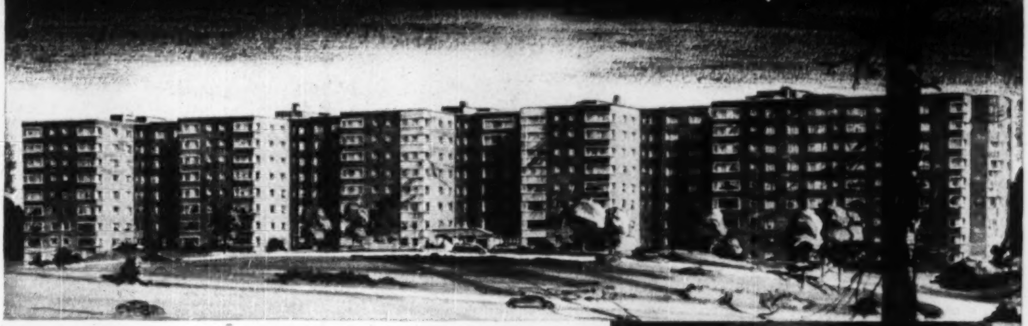

The Berkshire Apartments, 4201 Massachusetts Avenue, Washington, D. C. Builder: Standard Construction Company, Washington, D. C., Wm. Magazine, President, Charles Kaplan, Secretary. Architects: Corning & Moore. Consultants to Builder: Wm. Bornstein & Son, Inc., Chrysler Airtemp Dealer. Mechanical & Electrical Engineers: General Engineering Associates.

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YOUNGSTOWN OHIO

(Continued from page 58)

Mass. and 25 Livingston Ave., New Brunswick, engrs., adv. ENR 1/26, CD 7/13.

Tex., Houston—Bids Asked—Pleasantville, Inc. c/o M. A. Silverman, 6110 Almeda Rd., street constr., asph. paving. $75,000. Still, Wildman & Crockett, 3500 Almeda Rd., engrs.

LOW BIDDERS

New Jersey—State Hy. Dpt., Trenton, Jan. 12, ramps and viaducts 0.188 mi. Rt. 25 A, Sect. 1 E, Fed. Proj. U-187 (4) Newark, Essex Co., from Ell-Dorer Contg. Co., 644 Nye Ave., Irvington. **$282,921**. CD 12/16.

Texas—State Hy. Comn., Austin, Jan. 10, flexible base, two course asph. surf. tr. 11.073 mi. Hy. F.M. 894, Proj. S 1410 (1), San Patricio Co., from J. M. Dellinger, Inc., P. O. Box 4227, Corpus Christi, **$80,016**, est. $112,000***flexible base, single asph. surf. tr. 7.455 mi. Hy. FM 57, Proj. S 322 (2), Fisher Co. from Strain & Brown, Inc., P. O. Box 1057, San Angelo, **$120,320**, est. $120,000***grading, structures 16.924 mi. Hy. U.S. 66, Proj. F.I. 547 (10), Gray Co., from M. E. Ruby & Norman L. Larson, San Marcos, **$331,450**, est. $490,000***flexible base, single asph. surf. tr. 20.723 mi. Hy. FM 506, 497, 1018, Proj. S 393 (2), S. 393 (3), S 604 (2) and S. 1485 (1), Cameron and Willacy Counties, from E. B. Darby & Co., Pharr, **$179,159**, est. $198,000.

Flexible base, single asph. surf. tr. 14.584 mi. Hy. F.M. 586, Proj. S 274 (2, Brown Co., from J. W. Perry, 501 Insurance Bldg., San Antonio, Zone 5, **$55,767**, est. $74,000***flexible base, double asph. surf. tr. 12.765 mi. Hy. FM 926, Proj. S 1352 (1) and (2), Young Co., and flexible base, asph. surf. tr. 8.16 mi. Hy. FM 1151, Proj. S 1402 (1), Armstrong Co., from Cooper & Woodruff, 1203 Dallas Natl. Bank Bldg., Dallas, **$110,787** est. $115,000 and **$58,461** est. $70,000 respectively***flexible base, single asph. surf. tr. 10.379 mi. Hy. FM 1038 and 1037, Proj. S 1357 (1) and R. 146-8-1, Cottle Co., from Fred Hall & Son, Valley Mills, **$80,621** est. $78,000***grading, drainage structures and T. & P. underpass 6.417 mi. Hy. U.S. 82, Proj. F 380 (5), F 315 (6) and FG 315 (7), Lamar and Red River Counties, from Howard Bros., Madisonville, and W. S. Crawford Co., Dallas, **$229,819**, est. $255,000.

Flexible base, one course surf. tr. 10.974 mi. Hy. FM 852, Proj. S 1471 (1), Wood Co., from Howard Bros., Madisonville, and R. B. Butler Inc., Bryan, **$126,739**, est. $157,000***stabil. fdn. course and single asph. surf. tr. 6.917 mi. Hy. FM 1138, 1139 and 1143, Proj. S 1297 (1), S 1298 (1) and S. 1302 (1) Rockwall Co., from R. W. McKinney, P. O. Box 190, Nacogdoches, **$115,771**, est. $120,000***pavement wid'n., drainage 0.909 mi. Hy. U.S. 80, Proj. 235 (7), Midland Co., from Brown & Root, Inc., P. O. Box 1139, Austin, **$129,277**, est. $115,000***flexible base, asph. surf. 15.421 mi. Hy. F.M. 54 and F.M. 298, Proj. S. 1457 (1) and S. 473 (2) and (3), Bailey and Lamb Counties, and grading, structures, flexible base, single asph surf. tr. 10.3 mi. Hy. FM 1033 and FM 268, Proj. S 1246 (1), Childress Co., from Bryan & Hoffman, Plainview, **$89,365**, est. $115,000 and **$69,350**, est. $76,000 respectively. CD 12/22.

Texas—State Hy. Comn., Austin, Jan. 11, flexible base, single asph. surf. tr. Hy. FM 1090, S. 1296 (1) and (2), Matagorda and Brazoria Counties, from Heldenfels Bros., Rockport, **$100,557*****c. conc. wid'n. 9.206 mi. Hy. U.S. 287 C. 43-5-25, Wilbarger Co., from Harrison Eng. & Constr. Co., 4638 Mill Creek Parkway, Kansas City, Mo. **$128,114*****flexible base, asph. surf. Hy. U.S. 87, F 440 (15), Wilson Co., from Dean Word Co., New Braunfels, **$127,929*****flexible base, single asph. surf. tr. Hy. FM 296, V. 790-1-4, Dallam Co., from Ernest Loyd, P. O. Box 1120, Fort Worth, **$62,847*****flexible base, two course surf. tr. 7.435 mi. Hy. FM 118, 772 and 628, Proj. S. 1421 (1), S. 1420 (1) and S. 370 (2), Kleberg Co., from J. M. Dellinger, P. O. Box 4227, Corpus Christi, **$50,673**, est. $71,000***flexible base, single asph. surf. tr. 26.382 mi. S. 1386 (1), 1387 (1) and R. 1260-1-2, Wharton Co., from Pioneer Trucking & Constr. Co., Grapeland, **$183,680*****base and asph. surf. 7.972 mi. Hy. FM 1036, Proj. S. 1247 (1), Collingsworth Co., from Cooper & Woodruff, 1203 Dallas Natl. Bank Bldg., Dallas, **$78,436**, est. $70,000***flexible base, seal coat 13.419 mi. Hy. FM 450, Proj. S. 1196 (1), Harrison Co., from Thomas & Ratliff, Rogers, **$104,120**, est. $117,000***stabil. fdn. course, double asph. surf. tr. 9.933 mi. Hy. FM 866, S. 1470 (1), Ector Co., from Collins Constr. Co., 1701 W. 5 St., Austin, **$94,142**, est. $115,000***flexible base, double asph. surf. tr. Proj. S 46 (2), Montague Co., from Callan Constr. Co., Waco, **$75,283*****cancelled bids to have been opened Jan. 11, grading, structures, concrete and Main St. Viaduct 0.346 mi. El Paso on Hy. U. S. 80, 439 (19), El Paso Co., **$258,000**. CD 12/22.

CONTRACTS AWARDED

▲ **Oklahoma**—State Hy. Dpt., Oklahoma City, to Park-Ward Constr. Co., Insurance Bldg., Oklahoma City, grading, drainage 5.104 mi. S.H. 15, Major-Woodward Co. line west, SAP No. SAP 349 (2), Woodward Co., **$113,122**, est. $131,342; bit. paving, asph. base 4.209 mi. Jefferson and Love Counties, **$52,508**, est. $55,895; grading, drainage, 36 ft. roadbed 8 in. asph. bit. paving 4.439 mi. S.H. 15 from Fargo southwest, Ellis Co., **$76,592**, est. $85,166; grading, drainage 36 ft. roadbed 8 in. asph. bit. paving 4.835 mi. S.H. 15, southwest of Fargo extending southwest to Gage, Ellis Co., **$88,041**, est. $97,992***to McConnell Constr. Co., Muskogee, grading, minor drainage, stabil. aggregate base, double bit. surf. course 7.387 mi. S.H. 51 from Oneta southwest through Coweta, SAP 1047, Wagoner Co., **$232,421**, est. $248,435***to Standard Paving Co., 2119 E. 11 St., Tulsa, grading, drainage structures, c. conc. paving 2.245 mi. U.S. 75, south of the junction of U.S. 60 and extending north, incl. two bridges, ½ mi. south of Duncan, FAP No. F-15

(7), Stephens Co., **$334,726**, est. $312,819***to Layman & Co., 3001 S. Riverside Dr., Tulsa, grading, minor drainage, conc. paving 6.256 mi. S.H. 51, from Stillwater and extending west, SAP 1045 (1), Payne Co., **$306,828**, est. $302,276***to S. E. Evans Constr. Co., 2914 North O St., Fort Smith, Ark., grading, drainage, minor structures 6.772 mi., and 3 small bridges 0.018 mi. long, FAP 245 (1), McIntosh Co., **$114,595**, est. $161,726***to O. R. Gragg, Henryetta, grading, minor drainage structures, traffic bound surf. course 0.205 mi. and one bridge 0.059 mi. long on county road from 5 mi south and 1 mi. east of Holdenville, northeast over Little River, FASP No. S 643 (1), Hughes Co., **$91,370**, est. $97,483***to Jack Briscoe, Stillwater, grading, minor drainage structures and c. conc. paving 2.245 mi. New U.S. 75 south of the junction of U.S. 60 and new U.S. 75 and extending north, Washington Co., **$198,210**, est. $181,938. Grand total $1,608,413. Bids 1/10. H. E. Bailey, c/o owner, engr.

Pennsylvania—State Hy. Dpt., Harrisburg, 0.64 mi. divided Hy., c. conc. base with bit. surf. 24.05 ft., 31.03 ft., 33.07 ft. and variable in width on either or both sides of concrete divisor area; divided hy., crushed stone base with bit. surf. and surf. existing pavement with bit. surf., 26.05 ft., 33.07 ft. and variable in width on either side of concrete divisor; bit. surf. existing pavement 40.08 ft. in width incl. alterations to Broad Street Subway, etc. on Lots No. 250, 252, 254, 256, 260 on N. Broad St., L. R. 67045, Vire St. between 12 and Broad Sts. and between Broad and 19 Sts., Philadelphia Co., to Union Paving Co., 1227 N. Broad St., Phila., Zone 22, **$719,883**. Bids 12/21. CD 12/27, under LB.

Washington—State Hy. Dpt., Olympia, resurf. primary state hy., Paha to Ritzville, F.A.P. No. F 033-2 (3), Adams Co., to H. T. Mast, Colfax, **$351,292***surf. Lower River Rd., ERP No. ER-S-18 (1), Clark Co., to White Bros., Walla Walla, **$219,349***resurf. primary state highway Wilson Creek to Lincoln Co. line, F.A.P. No. F-0341 (1), Grant Co., to Birch McCartney, Veradale, **$186,407***approaches to Agate Pass bridge on Bainbridge Island, connecting with secondary State hy. 21-A, Kitsap Co., to M. P. and J. Halloran Co., 1216 1 Ave. W., Seattle, **$86,593**. Grand total $843,641. Bids 1/10. CD 12/29.

EARTHWORK, WATERWAYS

LOW BIDDERS

† **Minn., Minneapolis**—B.A. About 1/31—U. S. Eng., 1217 U. S. Post Office and Custom House, St. Paul, Zone 1, foundation grouting and misc. repairs at Locks, Lock and Dam 1, Mississippi River.

† **Arkansas**—B.A. 2/1—U. S. Eng., 300 Broadway, Little Rock, powerhouse and switchyard, Bull Shoals Dam Power Development, White River Watershed, White River, Serial No. CIVENG-03-050-50-41. Extended date. CD 11/30.

† **Illinois**—B.A. About 2/2—U. S. Eng., 826 U. S. Court House and Custom House, 1114 Market St., St. Louis 1, Mo., 1.2 mi. levee and 1 drainage structure, Proj. Item V-B, Embankment and Drainage Structure, Degognia and Foundation Bouff Drainage and Levee Dist., Jackson Co.

† **Illinois**—B.A. About 2/2—U. S. Eng., 826 U. S. Court House and Custom House, 1114 Market St., St. Louis 1, Mo., 1.7 mi. levee embankment, 4 drainage structures and alterations to discharge lines at 2 existing pumping plants, Proj. Item I-B, Wood River Drainage and Levee Dist., Madison Co.

† **North Dakota**—B.A. 2/2—U. S. Eng., Fort Lincoln, P. O. Box 300, Bismarck, 2,200 ft. steel pipe, various dimensions, for Garrison Dam Proj., Inv. 51. CD 6/1/44.

† **Washington**—B.A. 2/2—Bureau Reclamation, Dpt. Interior, Box 1377, Yakima, asphalt undersealing concrete canal lining, Yakima Ridge Canal, Station 313 to Station 323 about 7 mi. north of Yakima, Spec. R1-67. H. T. Nelson, regional dir.

† **Illinois and Missouri**—B.A. About 2/3—U. S. Eng., 826 U. S. Court House and Custom House, 1114 Market St., St. Louis 1, Mo., approx. 1.4 mi. levee and 2 gravity drains, Proj. Item II-C Embankment and Drainage Structures, Grand Tower Drainage and Levee Dist., Jackson Co., Ill. and Perry Co., Mo.

† **Illinois**—B.A. About 2/3—U. S. Eng., 826 U. S. Courthouse and Custom House, 1114 Market St., St. Louis, 1, Mo., pumping station of rein.-con., brick, with electrically driven pump units, appurtenant works, Proj. Item I Chouteau, Nameoki and Venice, Madison Co.

† **California**—B.A. 2/7—U. S. Eng., Wright Bldg., Sacramento, slide gates, appurtenances Borel Canal outlet work, Isabella Proj. Kern Co.

† **Illinois**—B.A. About 2/9—U. S. Eng., 826 U. S. Court House and Custom House, 1114 Market St., St. Louis, 1, Mo., approx. 2.8 mi. levees embankment and 2 drainage structures, Proj. Item III-B, Embankment, and Drainage Structures, Prairie Du Rocher and vicinity, Randolph Co.

▲† **California**—B.A. 2/10—U. S. Eng., 751 S. Figueroa St., Los Angeles, rectangular rein.-con. channel Sawtelle-Westwood System, Braddock Dr. to Washington Pl., CIVENG-04-343-50-21. Approx. $1,000,000.

† **Pennsylvania**—B.A. 2/15—U. S. Eng., P. O. Box 1715, 24 and Maryland Ave., Baltimore 3, Md., construct Williamsport Flood Protection Proj., Levee Unit 6C, Williamsport, Lycoming Co., Serial No. CIVENG-18-020-50-19. Plans deposit $30. CD 1/9.

† **Wash., Richland**—B.A. 2/15—U. S. Eng., 19 E. Poplar St., Walla Walla, turfing levees.

9 DUMPCRETES at GRAND COULEE DAM

Morrison-Knudsen, Peter Kiewit Place Concrete at Lower Cost

Dumpcretes were picked to haul and place 160,000 yards of concrete for the new East Powerhouse and Pumping Station at Grand Coulee. Hauls to scattered pours range up to 1½ miles. Morrison-Knudsen Co., Inc. and Peter Kiewit Sons' Co. find that Dumpcretes give them *low equipment cost, operating economy and top production.*

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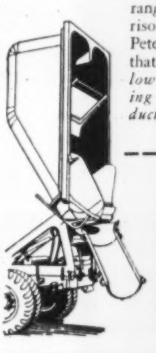

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"GUNITE" CONTRACTORS
GENERAL OFFICES—ALLENTOWN, PENNA., U.S.A.
MANUFACTURERS OF THE "CEMENT GUN"

LOW BIDDERS

† **Kentucky**—U. S. Eng., 8 W. Broadway, Louisville, Jan. 10, flood protection work, Sect. B, Covington, CIVENG-15-029-50-42, from W. L. Johnson Constr. Co., Shook Rd., Columbus, O., **$822,000.** Est. $1,000,000. CD 11/28.

CONTRACTS AWARDED

† **New York**—U. S. Eng., 24 St. and Maryland Ave., P. O. Box 1715, Baltimore 3, Md., Whitney Point Reservoir clearing, Otselic River, Whitney Point, Serial No. CIVENG-18-020-50-12, to Frank Bryan, Inc., 1263 Chartiers Ave., McKees Rocks, Pa., **$28,000.** Bids 1/10. CD 12/15.

† **Rhode Island**—U. S. Eng., Bldg. 21, Naval Drydock, South Boston Mass., dredging, imprvt. project Providence River and Harbor, Eng 19-016-50-29, to Arundel Corp., Pier 2, Pratt St., Baltimore, Md., **$193,500.** Bids 1/5. CD 12/28.

AIRPORTS

LOW BIDDERS

N. J., **Newark**—TERMINAL—Port of New York Auth., 111 8 Ave., New York, 11, N. Y., bids indefinitely postponed terminal bldg., expansion at Newark Airport, Contr. NA-20. CD 12/15.

CONTRACTS AWARDED

N. J., **Newark**—RUNWAYS, etc.—Port of New York Auth., 111 8 Ave., New York, 11, N. Y., furnishing, placing fill and drainage facilities for runways and taxiways at Newark Airport, Contr. NA-25, to Construction Aggregates Corp. and Peter Kiewit Sons' Co., 1 E. 42 St., New York, N. Y., **$5,968,250.** Bids 1/10, awarded 1/12. CD 12/15.

PUBLIC BUILDINGS

BIDS ASKED

Ont., **Cobourg**—HOME—B.A. 2/1—Wm. Barr, clk., United Counties of Northumberland and Durham, Cobourg, 3 story, 50 x 33 ft., concrete block Home for the Aged addn. Approx. $250,000. Plans deposit $30. Raunthwaite & Fairfield, 22 Harbord St., Toronto, archts. CD 11/9/48.

Calif., **Atascadero** — ARMORY — B.A. 2/7—State Div. Architecture, P. Wks. Bldg., Sacramento, Type A, 11,000 sq. ft., rein.-con. armory, incl. electrical and mechanical work. Plans deposit $25. Anson Boyd, Sacramento, state archt.

Calif., **Auburn**—ARMORY—B.A. 2/7—State Div. Architecture, P. Wks. Bldg., Sacramento, 15,801 sq. ft., rein.-con. armory and exhibit bldg., for California National Guard and 20th District Agricultural Assn. Plans deposit $25. Anson Boyd, state archt. and Raymond Franceschi, Chamber of Commerce Bldg., Sacramento, archt.

Ill., **Wood River**—AUDITORIUM GYMNASIUM—B.A. 2/8—Bd. Educ. School Dist. 104, Madison Co., Glen O. De Atley, supt., Lorena St. and Fourth Ave., 1 story, 72 x 116½ ft., brick, concrete, steel, stone auditorium-gymnasium and 1 story, bsmnt., 65 x 114 ft. and 36 x 40 ft. cafeteria addn., Lewis-Clark School 5 Ave., between Lorena and Acton Sts. $510,000. CD 6/7/49.

Tex., **Livingston and Corrigan**—HOSPITAL—B.A. 2/8—Polk Co., Courthouse, 2 hospitals and nurses home, 4 bldgs. under one proj., brick exterior, concrete frame and fdn. constr., air-conditioning. $250,000. Plans deposit $30. John Linn Scott, Nalle Bldg. Annex, Austin, archt. CD 10/4.

Ill., **Olney**—SCHOOL—B.A. 2/16—Bd. Educ., brick, concrete, steel high school, $950,000, Royal & Davis, Urbana, archts, CD 3/3/49.

▲ Wash., **Whidbey Island** — HOUSING — Bids Asked — Yards & Docks Annex, Navy Dpt., Arlington, Va., construct, manage and finance 375 housing units at Naval Air Station **$2,500,000.**

LOW BIDDERS

Fla., **Miami**—AUDITORIUM—Dade Co., Courthouse, Jan. 10, auditorium, Flagler St. and 28 Ave., from Caldwell & Scott, Inc., 90 Broad St., New York, N. Y., **$715,888,** CD 11/9.

Ill., **Alton**—SCHOOL—Alton Community Consolidated School Dist. 151, Madison Co., c/o Bd. Educ., H. E. Meyer, secy., Haskell House, 1211 Henry St., Jan. 4, general contract, 2 story, brick, concrete, Junior High School, State St., from J. J. Wuellner & Sons Constr. Co., 101 Oak St., Alton, **$485,075,** Est. $300,000. CD 12/2/49.

Tex., **Alpine** — DORMITORY, etc. — Sul Ross State Teachers College, Alpine, Jan. 9, 2 story, bsmnt., masonry, concrete frame girls dormitory concrete slab fdn., from Warner Constr. Co., Halcombe-Blanton Bldg., San Angelo, **$255,213,** est. $250,000. 2 story masonry fine arts bldg. and cafteria, from C. H. Leavell & Co. Ltd., 1900 Wyoming St., El Paso, **$307,500,** est. $250,000. CD 12/5.

CONTRACTS AWARDED

N. J., **Newark**—REPAIR STATION—New York Port of Auth., 111 Eighth Ave., New York, 11, N. Y., constr. maintenance and repair station for Newark Union Motor Truck Terminal, Contr. NJT-9, to Charles Christenson & Sons, 921 Bergen Ave., Jersey City, N. J., $145,179. Bids 1/4, awarded 1/12. CD 12/15.

▲ Va., **Petersburg**—BUILDING—State of Virginia, Richmond, building for male criminals at Central State Hospital for Negroes, to Goode Constr. Co., Johnston Bldg., Charlotte, N. C., **$1,137,200.** Baskervill & Son, Central **Natl.** Bank Bldg., **Richmond, archts.** CD 11/18.

Wis., **Wisconsin Rapids**—SCHOOL—Bd. Educ., **Wisconsin Rapids, 2 story,** part bsmnt., **60 x 480 ft. Howe Grade** School, to Immel Constr. Co., 562 **N.** Main St., Fond du Lac, **$277,896.** Bids 12/12, awarded 12/19. CD 12/21, under LB.

COMMERCIAL BUILDINGS

BIDS ASKED

N. Y., **Canandaigua**—HOSPITAL—B.A. 2/2—Frederick Ferris Thompson Hospital, Canandaigua, hospital addn. $350,000. Plans deposit $25. Cannon, Thiele, Betz & Cannon, 2637 Main St., Niagara Falls, archts.

▲ Tex., **Houston** — HOSPITAL — B.A. 2/14 — Arabia Temple Shrine AAONMS, 1322 Prairie St., 8 story, bsmnt., 277 bed crippled childrens hospital. $2,500,000. Alfred C. Finn, Bankers Mortgage Bldg., archt. Robert J. Cummins & Reginal T. Taylor, Bankers Mortgage Bldg., engrs. CD 11/28, under LB.

▲ Mo., **St. Louis**—STORE—B.A. March or April—May Dept. Stores Co., M. J. May, pres., c/o Famous-Barr Dept. Store, Railway Exchange Bldg., 601 Olive St., Zone 1, 3 story, bsmnt., 4 mezzanine floors 260x320 ft., brick, steel, stone, rein.-con. dept. store, incl. parking facilities on nearby lots, 2,180 car capacity, air-conditioning Kingshighway Blvd. and Chippawa St. $2,500,000, P. John Hoerner, 3415 S. Kingshighway, Zone 9, archt. Wm. C. E. Becker, Ambassador Bldg., 411 N. 7 St., Zone 1, structural engr. John D. Falvey, 316 N. 8 St., Zone 1, mech. engr. CD 10/15/46.

LOW BIDDERS

Tex., **Dallas**—STORES—Sam Lobella and L. J. Hexter, 1312 Main St., 4 unit stores, Preston Center, from Sachs & Stevens, Wholesale Merchants Bldg., **$340,964.** Bids 1/9. CD 1/5.

CONTRACTS AWARDED

Ia., **Davenport**—HOUSES—Davenport Garden Homes, Inc., 108 Securtiy Bldg., 100 houses. Owner builds, **$750,000.**

Ia., **Des Moines**—APARTMENT—Grand Plaza Constr. Co., 42 and Grand Ave., apartment. Owner builds, **$700,000.**

Ia., **Des Moines**—APARTMENT—Shannon W. Smith, 42 St. and Ingersoll Ave., apartment. Owner builds, **$275,000.**

▲ Ia., **Des Moines**—APARTMENT—University Terrace Apartment Co., 36 St. and Forest Ave., 180 unit apartment housing, to Weitz Constr. Inc., 406 Fleming Bldg. **$1,500,000.**

▲ Ia., **Des Moines** — APARTMENT — Wakonda Village Apartment Co., Walrous Ave., and Fleur Dr., 224 unit apartment to Weitz Constr., Inc., 406 Fleming Bldg. **$2,000,000.**

▲ Mo., **Berkeley (St. Louis, 21, P. O.)**—RESIDENCES—Schuermann Bldg. & Realty Co., 5934 Natural Bridge Rd., St. Louis, Zone 30, 420 frame residences, concrete fdns., in Nordell Hills Div. between Courtney Rd., Wabash R. R. along Airport Rd., own forces, **$2,000,000.**

▲ O., **Columbus**—HOMES—Blenheim Homes, Inc., 780 Oakland Park Ave., 175 frame, or frame, brick homes in Northridge-Indianola Addn., Blenheim Rd. and Northridge Rd., extending west of Indianola Ave. Owner builds. Approx. **$1,570,000.**

Alaska, **Anchorage**—APARTMENT—A. Swalling, Anchorage, 38 unit apartment, day labor. **$410,400.** CD 9/16.

▲ Alaska, **Anchorage**—APARTMENT—J. B. Warrack, Securities Bldg., Seattle 1, Wash., 59 unit Kinik **Arms** Apartment, **$637,200;** 34 unit Olaf Olson Apartment, **$367,200,** day labor. CD 9/16.

▲ Alaska, **Ketchikan**—APARTMENT—L. S. Ferris, Richmond Beach, Wash., 7 story, bsmnt., rein.-con. apartment, day labor. **$1,250,000.** CD 11/9.

INDUSTRIAL BUILDINGS

BIDS ASKED

La., **Gretna**—PLANT—B.A. 2/1—Southern Cotton Oil Co., Gretna, 4 story, 120x222 ft., masonry, steel shortening plant, Aug. Perez & Assoc., Audubon Bldg., New Orleans, archts.

Calif., **Sacramento**—PLANT—B.A. 2/10—Sacramento Bee, McClatchy Newspaper Service, 7 and I Sts., steel, rein.-con. newspaper plant, 1 st unit to house press, foundry and mail room, Approx. $68,000. Lockwood Greene Engineers, Inc., 10 Rockefeller Plaza, New York, N. Y., engr.

CONTRACTS AWARDED

Mo., **Clayton (St. Louis P. O.)**—SALES and SERVICE—West End Pontiac Co. Louis J. Eichel, pres., 7915 Forsyth Bldg., Clayton St. Louis, Zone 24, 1 story, 30x70 ft. and 70x160 ft., concrete, steel, brick, plate glass auto sales and service bldg., Maryland Ave. east of Brentwood Blvd., to L. O. Stocker Co., 3928 Lindell Blvd., St. Louis, Zone 8, Edw. J. Lawler, 3928 Lindell Blvd., St. Louis, Zone 8, archt. CD 9/21/48.

Tex., **Childress**—PLANT—Chickasha Cotton Oil Co., Childress, cotton gin plant, own forces. Approx. $75,000.

▲ Wis., **Wauwatosa**—WAREHOUSE—Sears, Roebuck & Co., W. Arthington and S. Homan Sts., Chicago, Ill., 1 story, irregular 200,000 sq. ft., concrete block, steel brick warehouse, concrete fdn. and floors, to Walter W. Oeflein, Inc., 5345 N. Hopkins St., Milwaukee, Zone 9, Approx. **$1,250,000.** John S. Reden, c/o owner, archt.

UNCLASSIFIED

BIDS ASKED

Missouri—RURAL DISTRIBUTION LINES—B.A. 2/2—Citizens Electric Co-opertive, St. Genevieve, labor only, constr. 117.2 mi. rural distr. lines, Cape Girardeau Co., $55,000; 186.07 mi. rural distr. lines, St. Genevieve Co., $75,000; 187.92 mi. rural distr. lines, Perry Co., $75,000. Plans deposit $10 each. Bids 12/15 rejected. CD 11/25.

California—LIGHTING SYSTEM—B.A. 2/8—State Div. Hys., P. Wks. Bldg., Sacramento, hy. lighting system on Yolo Causeway, Yolo Co. G. T. McCoy, Sacramento, state hy. engr.

† Ala., **Mobile**—UTILITY BLDGS.—B.A. 2/10—U.S. Eng., P. O. Box 1169, masonry utilities bldgs. adn. at National Cemetery, Inv. Eng 01-076-50-34. Plans deposit $5. Bid date changed. CD 1/11.

LOW BIDDERS

▲ Wash., **Seattle**—GRANDSTAND—University of Washington, 15 Ave. N. E. and E. 40 St., Zone 5, general contract upper-deck grandstand over south stands at football stadium, from Strand & Sons, 3939 University Way, Seattle, Zone 5, **$1,298,000.** Bids 1/10.

CONTRACTS AWARDED

La., **DeRidder**—SWIMMING POOL—City, A. L. Stewart, mayor, swimming pool, to McMichael Constr. Co., P. O. Box 508, Shreveport, **$57,000,** Est. $75,000. Bids 1/9. CD 12/30.

N. Y., **New York**—VENTILATING TOWER—Port of New York Auth., 111 8th Ave., Zone 11, superstructures for ventilating tower W. 179 St. approach to George Washington Bridge, to Harry Hershon Co., 1860 Broadway, Zone 23, **$611,415.** Bids 1/9. CD 1/12, under Public Buildings, LB.

O., **Middletown**—STADIUM STANDS—Bd. Educ., 1st Natl. Bank Bldg., steel stands for stadium, to Pittsburgh-Des Moines Steel Co., Neville Island, Pittsburgh, Pa., **$120,874.** Est. $225,000. Bids 1/5. Carl H. Martin, 25 Santa Fe Rd., arct.

PROPOSED PROJECTS

WATER SUPPLY

▲ Ariz., **Tucson**—City of Tucson, City Hall, **waterworks** imprv., **$1,250,000.** Yost & Gardner, Heard Bldg., Phoenix, consult. engrs.

Calif., **Napa**—City, City Hall, **exten. water sys. to Shipyard Acres, $200,000.**

Ind., **Scottsburg**—Town Bd., Scottsburg, WW. imprvs., 2 story, bsmnt., 37x42 ft., brick, concrete filtration plant, earthen dam for storage, piping, **$126,000.** Snyder, Wolford & McLellan, P. O. Box 138, Hillsboro, consult. engrs.

Ky., **Ludlow**—City, Water Com., John Lands, chn., City Hall, WW, incl. pump. station, wells, cleaning existing lines, install 24 in. c.i. lines, filter plant, **$490,000.** John Fielding, 25 W. 32 St., Covington, consult. engr.

▲ Mass., **Holyoke**—City, Water Dpt., City Hall, reservoir and dam, Southhampton, Approx. **$3,000,000,** Tighe & Bond, 189 High St., engrs.

▲ Mass., **Worcester**—City, Pub. Wks. Dpt., Earl Perry, Rm. 33, City Hall, c.i. water mains, pumping station, three 1,250,000 gal. capacity, stand pipes, Indian Hill, Green Hill, Millstone Hill, **$1,275,000.** Metcalf & Eddy, 1300 Statler Bldg. Boston consult. engrs. CD 8/26/43

O., **Blanchester**—Village, City Hall, W. W. Wickersham, clk., pump house and water reservoir, incl. pumphouse and equip. and reservoir, **$100,000.** Burgess & Niple, 568 E. Broad St., Columbus, consult. engrs.

R. I., **Westerly**—Town, Water Dpt., Town Hall, watermains, various streets, **$300,000.** C. K. Dion, c/o owner, engr. CD 6/23/47.

Que., **Mount Royal (Postal Dist. Montreal)**—HEADQUARTERS—Municipality plans by Luke & Little, 1410 Guy St., Montreal, police and fire headquarters building, **$250,000.** R. J. MacNeil, Town Hall, town engr. CD 2/21

SEWERS, WASTE DISPOSAL

▲ Ariz., **Tucson**—City of Tucson, City Hall, **sewerage** imprvs., **$1,500,000.** Headman, Ferguson & Carollo, 3308 N. 3 St., Phoenix, consult. engrs.

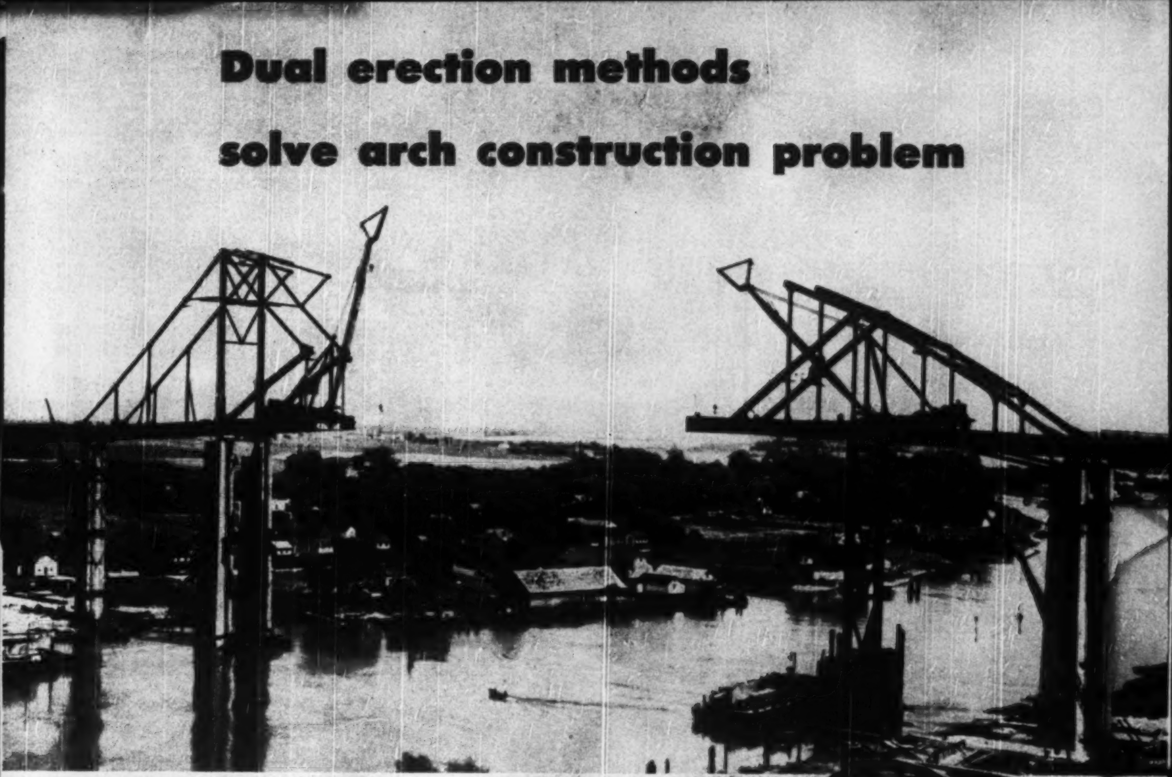
▲ Calif., **Long Beach**—City Council, Artesia St. storm drain pump district, **$473,662** North Long Beach Ditch, storm drain pump dist., No. 7, **$750,000;** extension of Willow St. Drain, **$130,000;** Dist. No. 3, draining pond at Columbia and Atlantic Sts., **$80,000;** Northeast storm drain district, first unit of storm drain from flood control on 10 St. to Atlantic Ave., **$1,000,000;** pump and discharge line from Yale to flood control on Willow St., **$20,000;** 30 in. drainage line in South St. from Haymills to Flood Control, **$8,000;** Total est. $2,500,000. Jesse Gilkerson, city engr. CD 12/6/44

Calif., **San Diego**—City Council, sewers and watermains in Millar St., **$52,633;** sewers in Paseo Dorado, Spindrift Dr., Princess St., Torrey Pines Rd., **$54,761.** Alden K. Fogg, city engr. CD 12/6/44

Mass., **North Attleboro**—Town Bd. Selectmen, Town Hall, sewer main extens. from Jefferson St. into Coral Lake Section, **$100,000.** Whitman & Howard, 89 Broad St., Boston, consult. engrs. CD 11/17

(Continued on page 64)

Dual erection methods solve arch construction problem



Erection of arch span, showing falsework and toggle bent. The arch is 93 ft. high, centerline rib to centerline of tie at mid-span, and provides a vertical clearance of 135 ft. at mean high water.

Completed bridge—built for the Philadelphia District of the U.S. Army Engineers—consists of a 540 ft. tied arch span flanked by girder approach spans at both ends. Total length between abutments—3954 ft. Weight of structural steel—5,000 tons. In addition to the fabrication and erection of the superstructure, American Bridge Company furnished the concrete roadway and sidewalk, stairs and electric lighting. Parsons, Brinckerhoff, Hall & Macdonald, Consulting Engineers.

- In erecting the new highway bridge over the Chesapeake and Delaware Canal at Chesapeake City, Md., the problem was to provide a safe channel for navigation during erection. Therefore only one falsework bent could be used. American Bridge engineers solved this difficulty by an unusual combination of erection methods, using a falsework bent at the south side of the canal and a toggle bent over the north pier.

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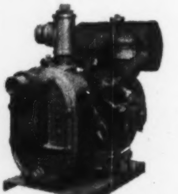

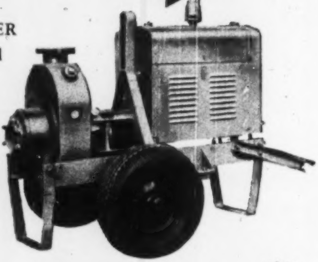

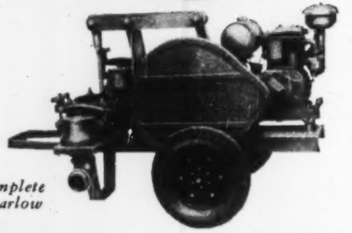

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CRANES
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HOES

⅜ to 1¼ yard crawler and rubber tire mounted

BAY CITY

BAY CITY SHOVELS, INC., BAY CITY, MICHIGAN

(Continued from page 62)

O., Wilmington—Town, R. C. Stephens, mayor, sewage disposal plant addn., primary and secondary, **$260,000.** Paul A. Uhlmann & Assoc., 1441 N. High St., Columbus, consult. engrs. Robert Conrad, Wilmington, engr.

O., Wyoming (Br. Cincinnati)—Village, sewage disposal plant, **$150,800.** F. G. Gedge, City Hall, Grove Ave., engr. CD 11/8/48.

Okla., Ada—City, H. J. Huddleston, mayor, Ada, sewage treatment plant, **$374,927;** sanitary sewers, **$545,646.** Ralph W. Delaney, P. O. Box 411, consult. engr. CD 10/29/46

Okla., Weleetka—City, Dr. Harry E. Beyer, pres. and Chn. Bd. Trustees, Weleetka, sewage treatment plant. **$117,500.** Ralph W. Delaney, P. O. Box 411, Ada, consult. engr.

▲ **Tex., Corpus Christi**—City sewage disposal plant, **$550,000-$700,000;** sanitary sewers, **$310,000.** Allied Engineers, Inc. & Paul D. Gregory, Fort Worth Natl. Bank Bldg., Fort Worth, engrs. R. L. Otto, city engr. CD 12/28.

BRIDGES

Calif., Stockton—City, City Hall, Stockton Channel bridge, **$375,000.** CD 2/8/45.

Wash., Tacoma—City, City Hall, **$700,000** bond election Mar. 7, East D St. Crossing and **$100,000** bond election for overpass approaches to Narrows Bridge. D. E. Morris, city engr. CD 11/10/48.

STREETS AND ROADS

Ariz., Tucson—City of Tucson, City Hall, streets and roads, $800,000. G. G. Sykes, Tucson, city engr.

O., Cleveland—City, City Hall, relocating Engle Rd. which now runs through Ford optioned land. **$300,000.**

O., Cleveland—Comrs. Cuayhoga Co., Courthouse, Lakeside and Ontario Sts., re-wid'n., resurf. W. 220 St. from Brookpark to Lorain Rds., **$160,000-$250,000;** asph. resurf. Harvard Ave. from E. 49 St. to Harvard Ave. Bridge, **$110,000;** asph. resurf. E. 49 St. from Washington Blvd. to Harvard Ave., **$50,000;** asph. resurf. Green to Anderson Rds., **$60,000.** Albert S. Porter, Standard Bldg., engr.

Tex., Alice—City, street wid'n., **$125,000.**

Tex., Alvin—Brazoria Co., W. R. Isaacs, comr., Alvin, permanent type paving, Fairview Rd., $75,000; Old Manvel Rd., **$50,000;** Five Points-Algoa Rd., **$65,000;** on stretch joining Hys. 6 and 35, **$85,000.**

Tex., Hallettsville—Lavaca Co., Hallettsville, voted bonds, 5 mi. farm-to-market road, **$110,000.** CD 12/6.

Tex., Laredo—Webb Co., Courthouse, Laredo, voted bonds, completing Country Club Dam and Lake Rd., **$100,000;** roads and bridges, southeast sect. of county, **$225,000;** farm-to-market roads, **$250,000;** paving coal mines road, **$175,000.** CD 12/19.

Wash., Colville—Stevens Co., Courthouse, Colville, constr. 23 mi. of road between Northport and Kettle River Rd., **$80,000;** clearing, grav. 16 mi. Springdale-Hunters Rd., **$80,000;** constr. 20 mi. Onion Creek Rd., **$70,000;** clearing, grav. 12.65 mi. Spirit-Cedar Creek Rd. 10 mi. Colville-Arizona Rd., **$50,000;** 8 mi. Addy-Gifford Rd., **$30,000;** 9 mi. Tum Tum-Spokane Rd., **$30,000;** 6 mi. Swiss Valley Rd., **$30,000;** 8 mi. Chewelah-West Side Rd., **$30,000;** 3.75 mi. Spirit-Northport Rd., **$25,000;** 2 mi. northport Hill Rd., **$25,000;** 7 mi. Thorpe Rd., **$25,000;** 3 mi. Springdale-Hunters Rd., **$25,000;** 7 mi. Rail Canyon Rd., **$25,000;** 7.5 mi. Arden-Twelve Mile Rd., **$25,000;** 5 mi. Colville-West Side Rd., **$25,000.** J. McInerny, co. engr. CD 8/17/45

Wash., Tacoma—City, City Hall, **$200,000** bond election Mar. 7, imprv. Milwaukee Way. D. E. Morris, city engr. CD 8/12/48.

EARTHWORK, WATERWAYS

N. J., Ocean City—City Comrs., dredging, **$400,000;** jetty at north end of city, **$320,000.** William H. Collison, Jr., 801 Asbury Ave., consult. engrs.

R. I., Galilee—State of Rhode Island, Franklyn A. Adams, purch. agt., State House, Providence, dredge channel, build steel bulkhead, fill with gravel providing 10 acres of new land, **$300,000.** Philip S. Mancini, c/o owner, engr.

▲ **Texas**—Brazos River Conservation & Reclamation Dist., c/o R. D. Collins, genl. mgr., P. O. Box 101, Mineral Wells, Seymour Proj., incl. dam and reservoir on Double Mountain Fork of Brazos River, and dam and reservoir on Salt Fork of Brazos River both with powerhouses, appurtenances. **$9,400,000;** Nugent Dam, powerhouse and reservoir, **$3,800,000.** Ambursen Eng. Corp., 295 Madison Ave., New York, N. Y. consult. engrs. CD 1/6.

AIRPORTS

Ill., Springfield — TERMINAL BUILDING, etc. — Springfield Airport Auth., Capitol Airport, Springfield, plans by Hadley & Worthington, Myers Bldg., terminal bldg. and control tower, **$150,000.**

▲ **Pa., Phila.**—AIRPORT IMPRVS.—Pennsylvania Air National Guard, Adjutant General's Office, South Office Bldg., Harrisburg, 2 hangars, administration bldg., supply bldg., parking apron, etc., International Airport. **$2,000,000.**

(Continued on page 66)

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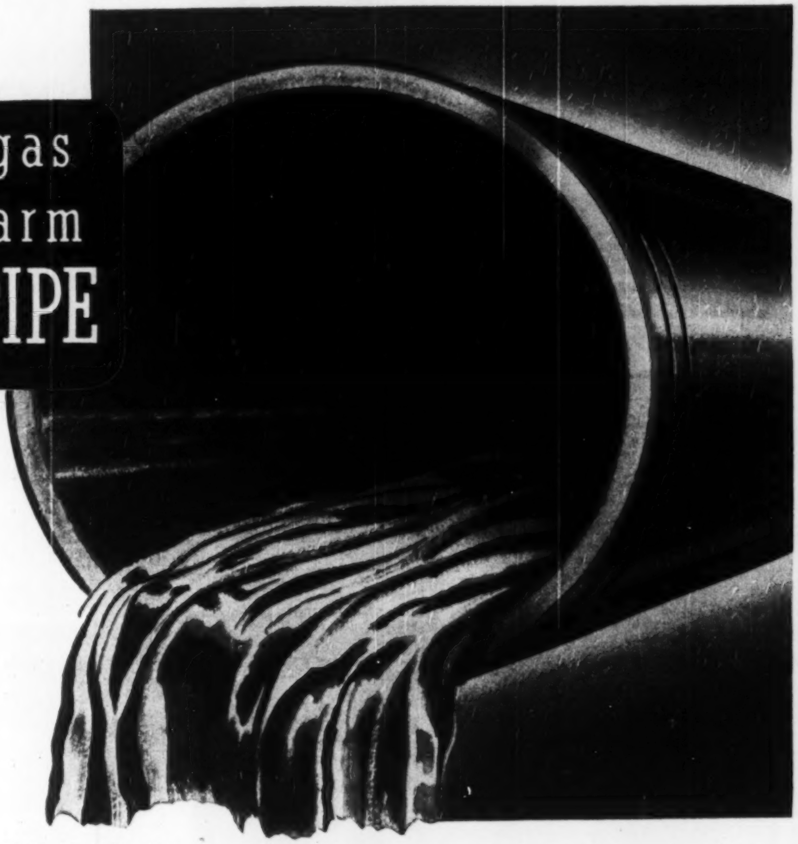

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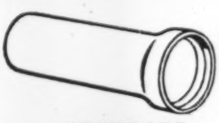

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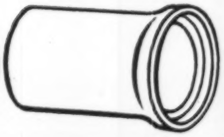

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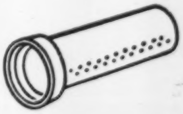

PERFORATED CLAY PIPE

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(Continued from page 64)

LATIN AMERICA

Brazil, Pelotas—Republic of Brazil, Rio de Janeiro, plans 500 meter extens. to Quay, warehouse, 200x100 meters. **$1,500,000.** The Port Administration, Rio de Janeiro, engr.

Brazil, Porto Alegre—The Port Admin., Rio de Janeiro, plans harbor imprvs. **$225,000.**

Mexico, Guadalajara—Latex Occidental, S. de R.L., Juan Alvarez, 926 Guadalajara, Jal., Mexico, plans latex mattress and cushion factory. **$400,000.**

Mexico, Linares—Mexican Govt., Sria. de R.H., Balderas, 94, Mexico City, plans 100,000,000 cu. mtr. dam for electricity generating plant and irrigation. **$3,000,000.**

Mexico, Mexico City—Rokuro Tago, Uruguay, 41½, Mexico City, plans hypodremic syringe factory. **$300,000.**

PUBLIC BUILDINGS

Ala., Birmingham — HOUSING — Birmingham Housing Auth., Birmingham, 3,000 housing units. Approx. **$250,000.**

▲ **Ala., Decatur**—HOUSING—Decatur Housing Authority, Decatur, plans by Albert R. Frahn & Assoc., Decatur, 250 housing units, **$1,000,000.** CD 12/9.

Ala., Gadsden—HOUSING—Gadsden Housing Auth., Gadsden, 750 housing units. Approx. **$250,000.**

Ala., Mobile—HEALTH CENTER—Mobile Co. Bd. Health, Mobile, health center. **$421,000.**

Calif., Coachella—SCHOOL—Coachella Valley Union High School Dist., Coachella, rein.-con. Coachella High School addn. Approx. **$250,000.** Bowen, Reul & Bowen, 2835 Gilroy St., Los Angeles, consult. engrs.

▲ **Calif., Fontana** — SCHOOL—Chaffey Union High School Dist., Ontario, **$1,700,000** bond election March 31, high school. Allison & Ribble, 625 S. Westmoreland St., Los Angeles, archts.

Colo., Denver—SCHOOLS—School Dist 1, City and Denver Co., 414 14 St., Denver, plans by Fisher & Fisher, Denver National Bank Bldg., 2 story, 1,000 accommodation 23 classroom Lewis C. Greenlee School. Approx. **$250,000;** plans by Raymond H. Ervin, 616 Patterson Bldg., 3 story, 1,350 to 1,600 student Manual Training School. Approx. **$250,000.**

▲ **Conn., Greenwich**—HIGH SCHOOL—Town of Greenwich, Supt. Schools, Fields Point Rd., brick, steel high school. **$2,000,000.**

Conn., North Haven—SCHOOL—Town, Bd. Selectmen, Town Hall, school, Maple Ave. and Bailey Rd. **$900,000.**

▲ **Conn., Norwalk**—HOUSING—City, S. C. Shaughnessy, chn. Washington Village, South Norwalk, plans by Holden McLaughlin Assoc., 570 Lexington Ave., New York, N. Y., 140 frame, brick veneer family units, South Norwalk Sevt., Scribner Ave. **$1,120,000.**

Del., Camden—SCHOOL, etc.—Caesar Rodney Special School Dist., Delaware State Bd. Educ., Dover, Camden, approved bond issue Caesar Rodney School addns., alterations. **$495,000.**

Del., Wilmington—SCHOOL—Rose Hill-Minquodale School Dist., 2019 Franklin St., plans by E. William Martin, 830 West St., school. **390,000.** CD 9/23.

Ga., Albany—HIGH SCHOOL—City, high school. Approx. **$250,000.**

Ga., Athens—HOUSING—Athens Housing Auth., Athens, 270 housing units. Approx. **$250,000.**

Ga., Sylvania—SCHOOL—Screven Co., plans by Aeck Associated, 140 Peachtree St., Atlanta, high school, Approx. **$250,000.**

† **Idaho, Arco**—STATION—U. S. Atomic Energy Comn., Idaho Falls, Idaho, appointed L. J. Sverdrup c/o Sverdrup & Parcel, Syndicate Trust Bldg., St. Louis 1, Mo., W. W. Horner c/o Horner & Shifrin, Shell Bldg., St. Louis, Mo., and H. M. Crothers, South Dakota State College of Agriculture & Mechanic Arts, Brookings, S. D., to assist in planning and development of Reactor Testing Station, here. CD 12/16.

† **Ill., Great Lakes**—ADMINISTRATION—U. S. Naval Training Station, Pub. Wks. Office Great Lakes, administration building addn. **$250,000.**

Ill., Palos Park—SCHOOL—Palos Park School Comn., 127 St. and 78 Ave., plans by Schmidt Garden Erickson, 104 S. Michigan St., Chicago, Zone 3, 1 story school. **$275,000.**

Ind., Porter—SCHOOL—Trustee Westchester Twp., Porter, plans by Beine, Hall & Curran, 607 Broadway, Gary, 1 story, 61x283 ft., brick, concrete, structural steel school. **$250,000.**

Md., Annapolis—SCHOOLS—Anne Arundel Co. Bd. Educ., 207 Hanover St., plans by Harder & Dressel, 5 Annapolis Hy., Glen Burnie, 1 story, brick Eastport Elementary School addn., etc., **$250,000;** plans by E. H. Glidden, Jr., 414 Equitable Bldg., Baltimore, brick school, Belle Grove Rd., 1 mi. off Ritchie Hy. in Brooklyn Park. **$400,000.**

▲ **Mass., Lawrence**—HOUSING—City of Lawrence Housing Auth., 56 Melvin St., plans by Pearson-Alter-James, 351 Essex St., 200 unit veteran housing Proj. 202. **$2,000,000.**

Mass., Lunenberg—SCHOOL—Town Bd. Selectmen, Town Hall, plans by S. W. Haynes & Assoc., 336 Main St., Fitchburg, 2 story, bsmt., 100x200 ft. brick, steel, Junior-Senior High School with two 35x130 ft., wings. **$500,000.** CD 3/18/46.

Mass., North Attleboro—SCHOOL—Town, School Dpt., plans by McLaughlin & Burr, 131 State St., Boston, two brick, 11 and 13 classroom school wing addn., John-Woodcock School. **$854,000.** CD 2/10.

Mass., Saugus—SCHOOL—Town School Dpt., 203 Winter St., high school. Approx. **$250,000.**

▲ **Minn., Excelsoir**—SCHOOL—Bd. Educ., W. O. Nilsen, supt., plans by Haxby, Bissell & Belari, 1111 Nicollet Ave., Minneapolis, high school on Hy. 7, near here, **$1,000,000,** CD 9/12.

Minn., Minneapolis—SCHOOL—Bd. Educ., H. B. Bruner, supt., 807 Broadway N. E., plans by E. H. Enger, 807 Broadway, grade school, between 56 and 57 Sts., and between Russell and Sheridan Aves. South; grade school addn., 31 Ave. S. and 43 St., **$600,000** and **$360,000,** respectively, CD 12/1.

N. J., Grenlock—HIGH SCHOOL—Black Horse Pike Regional High School Com., George Hartel, pres., Grenloch Regional High School, Main St. Approx. **$250,000.**

N. J., Trenton—SCHOOL—Bd. Educ., S. Stockton St., plans by Louis S. Kaplan, 25 N. Montgomery St., and Micklewright & Mountford, 73 Ewing St., Joseph Stokes Memorial School, U-shaped, with two story wing and auditorium. **$450,000.**

N. J., Wildwood—SCHOOL—Bd. Educ., 4300 Pacific Ave., plans by Heacock & Platt, 152 N. 15 St., Phila., Pa., elementary school, **$500,000.** CD 11/23.

▲ **N. Y., Brooklyn**—SCHOOL—Bd. Educ., 49 Flatbush Ave. Ext. Zone 1, plans by John Muller, 41 Union Sq., New York, Zone 3, 3 story Junior High School 258 at 200 Halsey St. **$2,725,000.** CD 2/4/43.

N. Y., New York—SCHOOL—Bd. Educ., 110 Livingston St., Brooklyn, Zone 2, plans by Hugh T. Lawrence, c/o owner, altering P. S. 90, 225 W. 147 St. **$250,000.**

N. C., Durham—HOUSING—Durham Housing Auth., Durham, 600 housing units. Approx. **$250,000.**

N. C., Hamlet—SCHOOL—Hamlet School Bd., H. M. Kyzer, supt., Hamlet, 1 story school, on 10 acre site between Rollins and McDonald Aves. **$325,000.**

N. C., Raleigh—HOUSING—Raleigh Housing Auth., Halifax Ct., 450 housing units. Approx. **$250,000.**

▲ **N. C., Wadesboro**—SCHOOLS—Anson Co. Bd. Educ., J. O. Bowman, supt., Wadesboro, defeated $940,000 bonds, schools. **$1,406,000.** CD 11/16.

N. C., Winston-Salem—SCHOOL—City, City Hall, N. Main St., plans by Hall Crews, Winston-Salem, Knollwood and Queen Streets School. **$550,000.**

N. C., Winston-Salem—HOUSING—Winston-Salem Housing Auth., N. Main St., 1,200 housing units. Approx. **$250,000.**

O., Euclid—SCHOOL—Bd. Educ., 23131 Lake Shore Blvd., plans by Fulton, Krinsky & Delamotte, 6014 Euclid Ave., Cleveland, 2 story, bsmnt., 50x115 ft., brick, steel Roosevelt School addn. **$250,000.** CD 8/25.

O., Eaton—SCHOOL—Bd. Educ., Eaton, **$150,000** bond election Feb. 14, school, northeast edge of Eaton, just outside city limits. CD 12/19.

O., Marietta—HOSPITAL—Bd. Trustees, Memorial Hospital, Marietta, 58 bed hospital addn. **$600,000.**

O., Middletown — ARMORY — State National Guard Bureau, Leo M. Kreber, adjutant general, Bldg. 101, Fort Hays, Columbus, 1 story, 145x168 ft. brick armory. **$250,000.**

Ore., Prineville—HIGH SCHOOL—Crook County School Dist., Prineville, voted bonds, senior high school. **$500,000.** Freeman, Hayslip & Tuft, 2040 S. W. 3 St., Portland, archts. CD 12/23.

Pa., Downingtown—HIGH SCHOOL—Downingtown Joint High School Bd., 322 E. Washington St., plans by MacKenzie & Wigmore, 117 S. 17 St., Phila., Junior-Senior High School. **$500,000.** CD 12/8.

Pa., Langhorne—HIGH SCHOOL—Langhorne-Middletown-Penndel, Hulmeville and Langhorne Manor Joint School Bds., Langhorne, high school. Approx. **$250,000.**

R. I., Lincoln—HIGH SCHOOL—Town, Vincent Nevine, supt. Schools, Lincoln, brick, steel high school. **$800,000.**

S. C., Charleston—ARMORY—South Carolina Military Sub-district, Columbia, armory for organized reserve corps. **$250,507.**

▲ **Tex., Borger** — HOUSING—Borger Housing Auth., c/o chn., Borger, plans by Boese & Harkrider, 423 N. Main St., Fort Worth, housing units. **$1,125,000.** CD 3/4/49.

Tex., Charlotte—SCHOOL—Charlotte Independent School Dist., Charlotte, $142,000 bond election June 17, masonry school. **$250,000.** Charles Huie, Jr., 1905 Transit Tower, San Antonio, archt.

▲ **Tex., Corpus Christi**—AUDITORIUM, etc.—City, plans by R. S. Colley, 3204 Santa Fe St., auditorium and convention hall. **$1,400,000.** R. L. Otto, city engr. CD 12/28.

Tex., Corpus Christi—CITY HALL—City, plans by R. S. Colley, 3204 Santa Fe St., city hall. **$500,000.** Robert L. Otto, city engr. CD 12/28.

Tex., Corpus Christi—POLICE—City plans by Morris Levy, Med. Prof. Bldg., police bldg. **$250,000.** Robert L. Otto, city engr. CD 1/3.

Tex., Denton — LIBRARY, etc. — North Texas State Teachers College, Denton, plans by Wilson & Patterson, Majestic Bldg., Fort Worth, library addn. **$300,000;** educational bldg. **$450,000.** Hare & Hare, 114 W. 10 St., Kansas City, Mo., landscape archts. and planners.

Tex., Donna—SCHOOL—Donna Independent School Dist., Donna, plans by R. Newell Waters, 1st. Natl. Bank Bldg., Donna, school. **$250,000.** CD 9/2.

Tex., Eagle Pass—SCHOOL—Eagle Pass Independent School Dist., Eagle Pass, voted bonds Dec. 29, school. **$325,000.** Phelps & De Wees & Simmons, 1501 Majestic Bldg., San Antonio, archts.

▲ **Tex., Edinburg**—HOUSING—Housing Auth., W. D. Woodruff, chn., Edinburg, plans by Boese & Harkrider, 423 N. Main St., Fort Worth, 150 housing units. **$1,125,000.** CD 10/28.

Tex., Fort Worth—HOSPITAL—Fort Worth Children's Hospital, 2400 Winton Terrace, 60 bed masonry hospital, 1300 block W. Lancaster St. **$700,000.**

Tex., Gainesville — HOUSING—Housing Auth., J. R. Evans, chn., Gainesville, plans by Boese & Harkrider, 423 N. Main St., Fort Worth, 100 housing units. **$750,000.**

Tex., Houston—SCHOOL—Houston Independent School Dist., 1600 Washington St., plans by Wyatt C. Hedrick, 5201 Fannin St., archt. and engr., Harper Negro elementary school; convert elementary into Junior High School, revamp heating sys. $250,000. CD 10/3/46.

† **Tex., Houston**—HOSPITAL—Veterans Admin., Vermont Ave. between H and I Sts. N.W., Wash. 25, D. C., remodeling, alterations for tuberculosis unit. **$250,000.**

▲ **Tex., Mission** — HOUSING — Housing Auth., George Boyle, chn., Mission, plans by Boese & Harkrider, 423 N. Main St., Fort Worth, 200 housing units. **$1,500,000.**

Tex., Pampa—EXHIBIT and STORAGE—Gray Co., c/o County Fair Grounds, Pampa, project abandoned, masonry, metal type exhibit and storage. **$150,000.** CD 1/3.

Tex., New Boston—HOUSING—Housing Auth., J. D. Looney, exec. dir., New Boston, plans by Joseph H. Gaylord, 507 Neil P. Anderson Bldg., Fort Worth, 50 housing units. **$375,000.**

▲ **Tex., Paris**—HOUSING—Housing Auth., A. M. Harrison, exec. dir., Paris, plans by Boese & Harkrider, 423 N. Main St., Fort Worth, 250 housing units. **$1,750,000.**

Tex., Roanoke—HIGH SCHOOL—Northwest Independent School Dist., Roanoke, plans by Wilson & Patterson, 202 Majestic Bldg., Fort Worth, 1 story masonry Northwest High School. **$250,000.**

Tex., Silsbee—HOSPITAL—Hardin Co., C. Richardson, judge, Kountze, $225,000 bond election Feb. 11, 50 bed hospital. **$450,000.**

▲ **Tex., Sweetwater**—HOUSING—Housing Auth., C. B. Bryant, chn., Sweetwater, plans by Boese & Harkrider, 423 N. Main St., Fort Worth, 200 housing units. **$1,500,000.** CD 9/23.

▲ **Tex., Weslaco**—HOUSING—Housing Auth., J. T. Ellis, Jr., chn., Weslaco, plans by Boese & Harkrider, 423 N. Main St., Fort Worth, 200 housing units. **$1,500,000.**

Wash., Grand Coulee — SCHOOL — School Bd., Grand Coulee, plans by Whitehouse & Price, Wshington Trust Bldg., Spokane, school. **$750,000.** CD 12/2/48.

▲ **Wash., Pullman** — DORMITORY — Washington State College, Pullman, plans by Paul Thiry, 800 Columbia St., Seattle, women's dormitory, **$1,500,000.** CD 11/28.

B. C., Abbotsford—HOSPITAL—Municipality, plans by Townley & Matheson, 1376 Hornby St., Vancouver, hospital. **$426,000.**

N. B., Sackville—SCHOOL—Bd. Trustees, Sackville, 16 room school, **$350,000.**

▲ **N. S., Cole Harbor**—HOSPITAL—Halifax Co., Halifax, plans by C. A. Fowler, Capitol Bldg., Halifax, mental hospital, **$1,000,000.**

N. S., Kennetcook—HIGH SCHOOL—Province of Nova Scotia, Halifax, plans by Dpt. Educ., Halifax, rural high school, Dpt. P. Wks., Halifax, engr.

▲ **Ont., Fort Williams**—HOUSES—Central Mortgage & Housing Corp., Kensington Bldg., Winnipeg, Man., 200 addnl. houses, Approx. **$1,400,000.** H. C. Spence, c/o owner, engr.

Ont., Kenora—SCHOOL—Public School Bd., Kenora, public schools. Approx. **$250,000.**

Ont., Pickering—SCHOOL—Pickering District High School Bd., R. Irwin, chn., plans by Shore & Moffat, 79 Queen St. E., Toronto, high school north of Community Park. Approx. **$466,000.** CD 8/5.

Ont., Windsor—HOSPITAL—East Windsor Hospital Bd., Dr. P. J. G. Morgan, med. supt., plans by J. P. Thomson, La Belle Bldg., 2 story, 66x99 ft., brick, East Windsor Hospital addn., concrete fdns., 3177 Sandwich St. E., Approx. **$450,000.**

Que., Montreal—SCHOOL—Catholic School Comn., 117 St. Catherine St. W., plans by J. E. Perron, 5862 Louis Colin Ave., 24 classroom school, 4290 Henri Julien Ave., near Marie Anne St. Approx. **$700,000.** LaLonde & Valois, Canada Cement Bldg., Montreal, engrs. CD 12/1.

Sask., Indian Head—HOSPITAL—Union Hospital Bd., Indian Head, plans by Portnall & Stock, Commerce Bank Bldg., Regina, hospital, **$250,000.**

COMMERCIAL BUILDINGS

Ala., Birmingham—OFFICE—Sloss-Sheffield Steel & Iron Co., c/o Van Keuren, Davis & Co., archts., American Life Bldg., Birmingham, office, Approx. **$250,000.**

▲ **Ark., Ft. Smith**—HOSPITAL—St. Edwards Mercy Hospital, 1411 Rogers St., Ft. Smith, 7 story hospital addn., remodeling, **$2,000,000.**

Ga., Atlanta—HOTEL—Meyer Hotels, John E. Meyer, pres., First Natl. Bldg., Birmingham, Ala., hotel, Approx. **$250,000.**

▲ **Ga., Atlanta**—OFFICE—Realty Operations, Inc., c/o Ben J. Massell Companies, 32 Pryor St. N. E., office, Peachtree and Fifth Sts. N. E., **$1,600,000.**

Ill., Chicago—PLANT—Barker Chemical Co., 2258 S. Union St., Zone 8, plant, 138 and C. & E. I. R.R., **$300,000.**

Ill., Chicago—OFFICE—Joseph Dubin, c/o W. Fred. Dolke, archt., 189 W. Madison St., Zone 2, convert-

(Continued on page 68)

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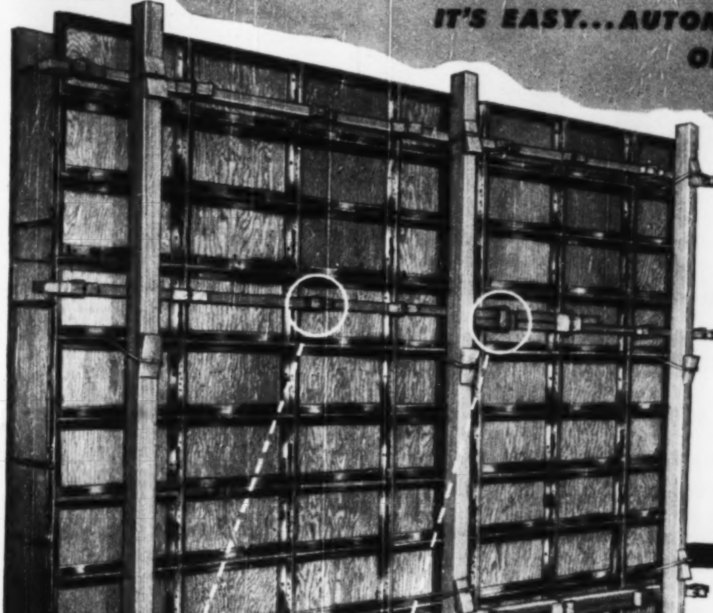

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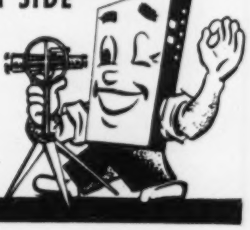

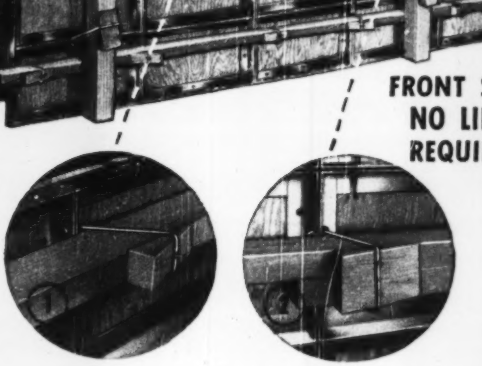

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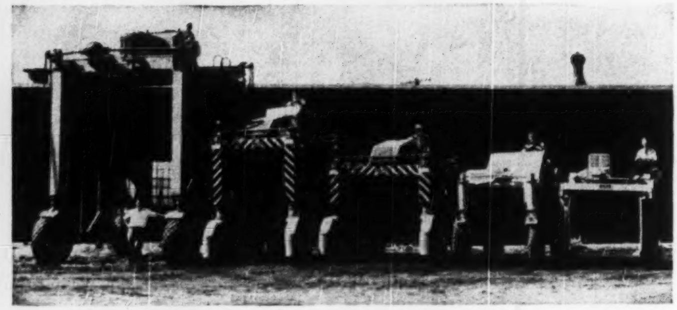

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(Continued from page 66)

ing old mansion into 3 story, brick, concrete office, 20 E. Huron St., Zone 11. $250,000.

Ill., **Chicago Heights**—OFFICE—Illinois Bell Telephone Co., 212 W. Washington St., Chicago, plans by Holabird & Root, 180 N. Wabash St., Zone 1, 3 story, steel, concrete, brick, stone dial exchange office. $500,000.

Ill., **Chicago**—OFFICE—Illinois Bell Telephone Co., 212 W. Washington St., office and exchange expansion, 1049 South Blvd. in Oak Park, $250,000.

▲ Ill., **Chicago**—APARTMENTS—H. S. Greenwald & Sam Katzin, 332 S. Michigan St., Zone 4, plans by Pace Associates, 53 W. Jackson St., Zone 4, six 14 story 68 unit apartments on Cornell Ave. between E. 50 St. and Hyde Park Blvd., $4,100,000. Ludwing Mies Vander Rohe, 37 S. Wabash St., Zone 3, consult. engr. and Holsman, Holsman, Kelkamp & Taylor, 39 S. State St., Zone 3, assoc. archts.

Ill., **Evanston**—OFFICE, etc.—National Foundation of Funeral Services, 1560 Central St., plans by Walter A. McDougall, 5 E. Erie St., Chicago, Zone 11, 2 story, bsmnt., office and school, $250,000.

▲ Ill., **Evanston**—HOSPITAL—St. Francis Hospital, 355 Ridge Ave., plans by Herman J. Gaul, 228 E. Superior St., Chicago, Zone 11, 4 story, bsmnt., face brick, steel, concrete hospital addn.-wing. $1,500,000.

▲ Ind., **Fort Wayne**—HOSPITAL—Bd. Trustees, Methodist Hospital, Lewis St., Methodist hospital at Randillia Dr. and East State Blvd., east, $2,500,000, revised plans. CD 9/23/49.

Ind., **Notre Dame**—DORMITORY—University of Notre Dame, Rev. John J. Cavanaugh, C. S. C., pres., dormitory, known as Fred J. and Sally Fisher Memorial, $750,000.

Md., **Salisbury**—APARTMENTS—North Park Gardens, Inc., c/o Aaron Colish, archt., 117 S. 17 St., Phila., Pa., apartment development, Glen Ave., etc. $250,000.

Mass., **Lynn**—HOSPITAL—Union Hospital, Cedric Arnold Hospital Bldg., Comn., 25 Linwood St., plans by Kendall Taylor & Co., Inc., 221 Columbus Ave., Boston, brick, steel, concrete hospital, $550,000. CD 6/20/46.

Mass., **Medford**—COLLEGE UNIT—Bouve-Boston School Physical Educ., 105 S. Huntington Ave., Brookline, plans by Bogner & Richmond, 1430 Massachusetts Ave., Cambridge, 2 story, brick steel college unit, Tufts College Campus. Approx. $250,000.

Mass., **Winthrop**—SCHOOL—St. John's the Evangelist R. C. Parish, Archdiocese of Boston, Lake St., Brighton, plans by Richard Shaw, 25 Huntington Ave., Boston, 2 story, bsmnt., brick, steel parochial school. $250,000.

Mass., **Worcester**—AUDITORIUM—St. Peter's Parish, John J. Bell, pastor, 865 Main St., plans by C. W. Buckley, 311 Main St., brick, steel auditorium, classrooms and gymnasium, $250,000.

Minn., **Blue Earth**—SCHOOL—Church of St. Peter and St. Paul, Rev. M. Satory, plans by Pass & Rockey, Mankato, 8 classroom, brick grade school, $325,000.

Minn., **Hastings**—HOSPITAL—Hastings Community Hospital, E. J. Savoie, chn. Bldg. Com., hospital, Nininger Rd., west of here. Approx. $400,000, Sisters of Charity, Jackson, Minn., operators.

Minn., **Minneapolis**—THEATRE—R. Green, 1010 Builders Exchange Bldg., 1200 person seating capacity theatre, 3907-11 Nicollet Ave. $300,000.

Miss., **Jackson**—CHURCH—West Park Methodist Church, 220 Moss Ave., plans by Spain & Biggers, Dpt. Guaranty Bank Bldg., church, $250,000.

▲ Mo., **St. Louis**—OFFICE—American Automobile Insurance Co., 112 N. 4 St., Zone 2, plans by Russell, Crowell, Mullgardt & Schwartz, 1620 Chemical Bldg., 721 Olive St., Zone 1, 5 story (ultimately 10 story) bsmnt., 160x183 ft. Bedford stone, granite block, rein.-con., steel office bldg., incl. garage facilities, Lindell Blvd. and Spring Ave. $2,500,000. Otto E. Heinicke & Co., 122 N. 7 St., Zone 1, structural engrs., Ferris & Hamig, 1706 Olive St., Zone 3, mech. engrs.

Neb., **Columbus**—SCHOOL, etc.—St. Bonaventure's Catholic Church, Columbus, plans by L. O. Daly Co., Insurance Bldg., Omaha, school and convent. $275,000.

N. H., **Lebanon**—HOSPITAL—Alice Peck Day Memorial Hospital, 127 Mascoma St., plans by Kendall Taylor & Co. Inc., 221 Columbus Ave., Boston, Mass., 2 story, bsmnt., brick hospital addn., alterations. $360,000.

▲ N. J., **Atlantic City**—APARTMENT, etc.—E. J. Frankel and Sylvester J. Lowry, 1325 Walnut St., Phila., Pa., plans by Samuel I. Oshiver & Raymond Knopf, 1704 Walnut St., Phila., Pa., apartment bldg., restaurant and stores, Raleigh Ave. and Boardwalk, $3,000,000; Carver Hall Apartmments, S. Carolina and Magellan Aves., $2,500,000.

N. J., **Wildwood**—RESIDENTIAL DEVELOPMENT—Lew Tendler, 227 S. Broad St., Phila., Pa., residential and commercial development, Boardwalk and Surf Ave. $250,000.

N. J., **Woodbury**—HOSPITAL—Bd. Trustees Brewer Hospital, Broad and Hunter Sts., plans by H. M. Klaisz, 7 N. Maple Ave., hospital, $250,000.

N. Y., **Auburndale**—HOUSING—Auburndale Apartments, Inc., c/o Samuel Paul, archt., 163-18 Jamaica Ave., Jamaica, 36 two story, two-family houses in area bounded by 37, 39 Aves., 194 and 195 Sts. $480,000.

N. Y., **Brooklyn**—RECREATION—Roman Catholic Church of St. Michael, 225 Jerome St., Zone 7, plans by Paul C. Reilly, 111 Fifth Ave., New York, Zone 3, 1 story recreation bldg., Liberty Ave. and Warwick St. $420,000.

N. Y., **New York**—APARTMENT—Henry Hudson Housing Corp., 3239 Rochambeau Ave., Zone 67, plans by Tito Di Vincenzo, 209 S. 5 Ave., Mt. Vernon, 6 story apartment, Henry Hudson Parkway and 227 St. $410,000.

N. Y., New York—HOUSES—Anthony A. Peterno, 2112 Broadway, Zone 3, plans by T to Di Vincenzo, 209 S. 5 Ave., Mt. Vernon, 30 two story houses, Henry Hudson Parkway and 247 St. **$342,200.**

N. Y., Queens Village—HOUSES—Hartland Homes, c/o Charles L. Koester archt., 111-15 196 St., Hollis, 45 one-family houses, 81 Ave., W. Grand Central Parkway, 219 St., and Union Turnpike. **$495,000.**

N. C., Greensboro—CHURCH—West Market Street Methodist Church, Greensboro, plans by Albert C. Woodroof, Jefferson Bldg., church. **$360,000.**

N. C., Raleigh—YWCA BLDG.—Young Womens Christian Assn., Miss Ruth Wilson, pres., C. A. Dillon, genl. chn. Drive, 206 S. Salisbury St., plans by Haskins & Cooper, Raleigh Bldg., 4 floors, (1st unit) 2 unit, gymnasium and outdoor pool, Y. W. C. A. bldg., 2nd block of W. Jones St. **$400,000.**

N. C., Statesville—CHURCH—First Baptist Church, c/o C. C. Benton, archt., Wilson, church. **$325,000.**

O., Cincinnati—SALES and OFFICE—National Cash Register Co., S. Main and Kay Sts., Dayton, plans by Charles Demming, S. Main and Kay Sts., Dayton, 1 story, bsmnt., 90x100 ft., probably brick, sales and office, concrete fdn. W. Central Parkway. **$350,000.**

▲ **O., Cleveland**—HOSPITAL—Trustees of Fairview Park Hospital, 3305 Franklin St., plans by Garfield, Harris, Robinson & Schafer, 1740 E. 12 St., 200 bed hospital and 1 nurses home, on 14 acre tract, Lorain Ave. adjacent to Rocky River Valley. **$3,200,000.**

▲ **O., Cleveland Heights**—APARTMENTS—Stager Corp., c/o George Burrows & Assoc., archts., 1621 Lee Rd., Cleveland, six 2½ story apartments, Overlook Rd. and Euclid Heights Blvd. **$1,000,000.**

▲ **O., Euclid**—APARTMENT—Benton Building Co., 481 Babbitt Rd., 300 suite, brick, block, steel apartment, Lake Shore Blvd. between E. 232 and E. 238 Sts. **$1,500,000.**

▲ **Pa., Phila.**—APARTMENT—E. J. Frankel & Sylvester J. Lowery, 1325 Walnut St., plans by Samuel I. Oshiver & J. Raymond Knopf, 1704 Walnut St., apartment, Green and Johnson Sts. **$1,750,000.**

▲ **Pa., Phila.**—APARTMENT—Kevy H. Kaiserman & Matthew H. McCloskey Jr., 1620 W. Thompson St., plans by Samuel I. Oshiver & J. Raymond Knopf & J. Ethan Fieldstein (Assoc.), 1704 Walnut St., apartment, 18 and Walnut Sts. **$5,000,000.**

R. I., Cranston—CONVENT—St. Mary's Roman Catholic Parish, Oliver J. Bernasconi ,pastor, Cranston, 3 story, brick, stone convent. **$250,000.**

R. I., Natick—SCHOOL—St. Josephs Roman Catholic Parish, Natick, plans by Oliver O. Gauvin, 72 Weybosset St., Providence, parochial school. Approx. **$250,000.**

R. I., Providence—PAROCHIAL SCHOOL—St. Augustine's Roman Catholic Parish, R. J. McVinney, Bishop of Providence, Fenner St., plans by Joseph M. Mosher, 334 Westminster St., 2 story, bsmnt., brick, steel parochial school, Smith St. **$350,000.**

R. I., Westerly—SCHOOL—Immaculate Conception Roman Catholic Parish, R. F. Hafner, pastor, High St., plans by J. M. Mosher, 334 Westminster St., Providence, 2 story, bsmnt., brick, steel parochial school, High St. **$300,000.**

S. D., Rapid City—HOSPITAL—St. John's Hospital, Rapid City, plans by Ewing & Forrette, Rapid City, hospital. **$800,000.**

Tex., Baytown—SHOPPING CENTER—L. F. Corrigan, Mercantile Bank Bldg., Dallas, masonry shopping center. **$450,000.**

Tex., Beaumont—DWELLINGS—Combest, Inc., c/o W. T. Hames, American Natl. Bank Bldg., 24 dwellings, Maplewood St. **$250,000;** 28 dwellings, on Minglewood Dr.

▲ **Tex., Beaumont** — APARTMENTS — Gaylynn Apartment Corp., c/o D. Hannah & J. Cassidy, 80 Main St., Houston, plans by Wilson, Morris & Crain, 3330 Graustauk St., Houston, 15 apartments, adjacent Gaylynn Theater area. **$975,000;** 12 apartments, adjacent Northway Arms Apartments, **$775,000.**

Tex., Beaumont—APARTMENT—M. L. Lefler Jr. & Assoc., Wiess Bldg., 50 addnl. Negro apartment units. **$300,000.**

Tex., Beaumont—DWELLINGS—H. G. Nichols, 4555 Maddox St., dwelling proj. **$250,000.**

Tex., Brownsville—APARTMENT—Tilton Garrison, San Benito, 40 masonry apartments. **$750,000.**

Tex., Corpus Christi—CHURCH—Second Baptist Church, 605 Furman St., masonry church-auditorium. **$250,000.**

Tex., Dallas—HOUSING—B. & C. Building Corp., 9320 Preston Rd., plans by Zollicoffer & Richardson, 1902½ McKinney St., frame housing, concrete post fdn., Wilhurt St. **$250,000.**

Tex., Dallas — APARTMENTS — Char-Beau-Nay Apartments, c/o Earl J. Brennan, 6034 Joyce Way, brick veneer apartments. **$250,000**

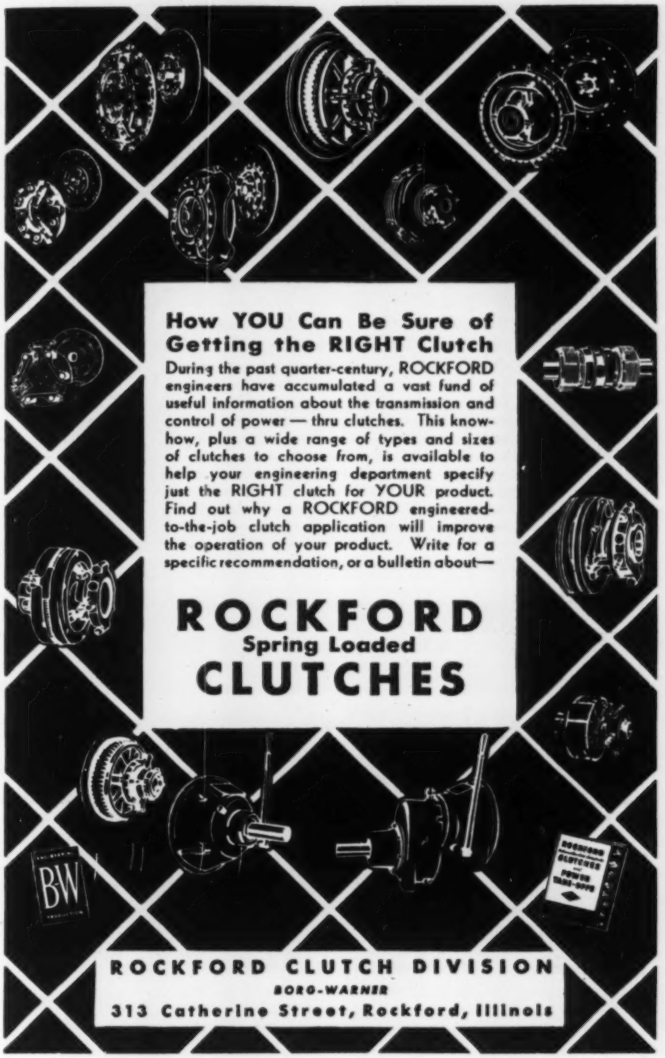
Tex., Dallas—SHOPPING CENTER—Bailey Johnson Co., Lake June Rd., shopping center, 3rd sect. of Pleasant Grove zone and for adjacent housing areas. **$300,000.**

Tex., Dallas—DUPLEXES—L & G Corp., c/o Sam Letts, 3336 Inwood Rd., 210 two story, brick veneer duplexes, concrete slab fdn., southwest off Inwood Rd. and Mockingbird Lane. **$850,000.**

Tex., Eagle Pass—HOUSING—Lee Constr. Co., Eagle Pass, plans by Ernest Reed, Box 6532, Alamo Heights, frame housing proj. **$250,000.**

▲ **Tex., Fort Worth** — APARTMENT — Ridgway Apartments, Inc., c/o E. E. Cicer, pres., 2825 Crockett St., plans by Charles W. Armstrong, 351 Majestic Bldg., 200 units, 12 brick apartments in Ridglea Addn. **$2,500,000.**

Tex., Garland—HOUSING—Town & Country Builders, Inc., c/o Nathan L. Jones, pres., 9001 Denton Dr., Dallas, housing. **$350,000.**



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Tex., Harlingen—BANK—First Natl. Bank of Harlingen, Harlingen, masonry bank. **$250,000.**

Tex., Houston—HOUSING—D. J. Arcemant, 9446 L St., cedar shakes housing, concrete slab fdn., in 1st sect. of Forest Oaks. **$250,000.**

▲ **Tex., Houston**—SHOPPING CENTER, DWELLINGS—S. N. Adams, 3713 Inwood St., addnl. masonry shopping center off Drexel St. **$1,000,000**; 100 semi-permanent type dwellings off Westheimer Rd. **$1,000,000**; 150 dwellings in area of Oak Estates. **$1,300,000.**

Tex., Houston—HOUSING—C. M. Campbell, 2368 Rice Bldg., cedar shake siding housing, concrete post fdn., in 1st. sect. of Forest Oaks. **$275,000.**

Tex., Houston—HOUSING—D. D. Hutchison, 6619 Long Dr., housing in 2nd sec. Forest Oaks. **$300,000.**

Tex., Houston—OFFICE—Kagan & Rudy, 821 Commerce St., 2 story, 30,000 sq. ft., brick office, steel, concrete frame and fdn., 2606 Main St. **$300,000.** J. B. Dannenbaum, 3920 Main St., consult. engr.

Tex., Houston—DWELLINGS—A. B. Keese, 2615 Metcalf St., 32 dwellings off Larkspur and Allendale Rd. **$275,000.**

Tex., Houston—HOUSING—King & Sheets, City Natl. Bank Bldg., addnl. frame housing, concrete slab fdn., Childress and Purdue Sts. **$250,000.**

Tex., Houston—DWELLINGS—L. D. Rogers, 6906 Capitol St., 30 cedar shakes and wood siding dwellings, concrete slab fdn., in 2nd sect. Forest Oaks. **$250,000.**

Tex., Midland—HOUSING—Town & Country Builders, Inc., c/o Nathan L. Jones, pres., 9001 Denton Dr., Dallas, housing. **$250,000.**

Tex., Odessa—HOUSING—Town & Country Builders, Inc., c/o Nathan L. Jones, pres., 9001 Denton Dr., Dallas, housing. **$250,000.**

Tex., Rockwall—HOUSING—Town & Country Builders, Inc., c/o Nathan L. Jones, pres., 9001 Denton Dr., Dallas, housing. **$300,000.**

Tex., San Benito—DWELLINGS—Tilton Garrison, San Benito 50 brick stucco dwellings, mostly concrete post fdns. **$350,000.**

Tex., San Antonio—DWELLINGS—Kinmac Quality Homes, c/o Gilbert E. Kinder, 426 John Adams St., plans by Tony Trujillo's Jefferson Design Service, 3400 Fredericksburg Rd., 40 frame dwellings, off Basse and Blanco Rds. **$300,000**; 40 frame dwellings, Allena Village. **$325,000**; 30 dwellings, in George Delavan new sub-division, **$250,000.**

Tex., San Antonio—DWELLINGS—Mission Constr. Co., 110 Arcadia Pl., 23 masonry dwellings, concrete beam fdn., in Shearer Hills east. **$400,000.**

Tex., Texas City—HOUSING—Magnolia Development Co., Texas City, housing, Mainland Park Sect. A. **$250,000.**

▲ **Tex., Victoria**—DWELLINGS—Owners, c/o Chamber of Commerce, Victoria, 108 frame dwellings, concrete post fdn. **$750,000**; 64 garage apartments. **$475,000.**

Alaska, Fairbanks—HOUSING—Nelse Mortensen & Co., 1021 Westlake Ave. N., Seattle, Wash., 256 apartment type housing units. **$500,000.**

Ont., Cornwall—ORPHANAGE—Sisters of St. Joseph, Alexandria, and R. C. Diocese of Alexandria, plans by Drever & Smith, 81 Brock St., Kingston, orphanage. Approx. **$300,000.**

▲ **Ont., Sudbury**—SANATORIUM—Algoma Sanatorium J. J. Olscomp, secy., plans by L. M. Falbro, 493 Ramsey Rd., and J. B. Sutton, 81 Lorne St., Algoma Sanatorium, at south end of Lake Ramsay. **$1,250,000.** CD 9/23.

Ont., Toronto—CHURCH—Diocese of Church of England, Rev. F. J. Saver, director of eschension, 135 Adelaid St. E., church buildings and Sunday session school, Approx. **$500,000.**

INDUSTRIAL BUILDINGS

▲ **Ill., Chicago**—FACTORY—Olson Rug Co., 4010 W. Diversey St., Zone 41, plans by Niestadt & Love, 407 S. Dearborn St., Zone 4, 6 story, bsmnt., 140x240 ft., steel, concrete, brick factory, **$1,250,000.**

Ind., Greensburg—PLANT—Noblitt Sparks Industries, Columbus, plant on 11 acre tract. Approx. **$150,000.**

Ia., Sioux City—PLANT—Swift & Co., 4115 S. Packers St., Chicago, Ill., packing house plant addn. **$300,000.** H. C. Watts, c/o owner, ch. constr. engr. CD 9/30.

Kan., Kinsley—GRAIN ELEVATOR—Kinsley Co-operative, Kinsley, grain elevator. **$150,000.**

N. Y., Brooklyn—STORAGE—Soreb Service Corp., 20 W. 40 St., New York, Zone 18, plans by Irving M. Ferichel, 724 Fifth Ave., New York, Zone 19, altering 5 story storage bldg. and store 237-43 Duffield St. **$150,000.**

▲ **N. D., Carrington**—GENERATING PLANT—Central Power Electric Co-operative, Carrington, 45,000 kw. steam generating plant. **$8,521,000.**

O., Cincinnati—WAREHOUSE, etc.—Bavarian Brewing Co., 528 W. 12 St., Covington, Ky., plans by H. N. Hermann & Assoc., engrs. and archts., 617 Vine St., brick, steel shipping warehouse, office and garage, concrete loading docks and floors, etc. **$350,000.**

O., Cincinnati—WAREHOUSE, etc.—Joseph T. Ryerson & Son, Inc., Front and Freeman St., plans by Vogt, Ivers, Seamen & Assoc., engrs. and archt., 2nd Natl. Bank Bldg., 9 and Main Sts., 1 story, 163,000 sq. ft. warehouse, 1 story, 10,300 sq. ft. office, brick, concrete, steel constr.

▲ **O., Cleveland**—FOUNDRY, etc.—Ford Motor Co., 3000 Schaefer St., Dearborn, Mich., 17-acre foundry and engine-assembly plant, covering 200 acres of land between Brookpark and Hummel Rds. **$80,000,000.**

O., Dayton—SALES, etc.—Paddock Pontiac Co., L. F. Paddock, vice pres., 520 N. Main St., sales and service bldg., 722 N. Main St. **$300,000.**

O., Lakewood—PLANT—White Sewing Machine Corp., 1231 Main St., Cleveland, plans by Ernest McGeorge & Wm. Harget, 7016 Euclid Ave., Cleveland, 2 story, 160x500 ft. brick, block, steel woodworking plant. **$100,000.**

O., Toledo—GRAIN ELEVATOR—Michigan Elevator Exchange, J. R. Bliss, genl. mgr., 221 N. Cedar St., Lansing, Mich., 500,000 bu. terminal grain elevator.

O., Youngstown—BAKERY—Schwebel Baking Co., Mrs. Dora Schwebel, pres., 1716 W. Lawrence St., bakery plant on 4-acre site at Lake Park Rd. and Midlothian Blvd. **$200,000.**

Okla., Bethany—SUB STATION—Oklahoma Gas & Electric Co., 321 N. Harvey St., Oklahoma City, electric sub-station. **$150,000.**

Okla., Britton—SWITCHING STATION—Oklahoma Gas & Electric Co., 321 N. Harvey St., Oklahoma City, electric switching station. **$150,000.**

Pa., Phila.—WAREHOUSE, etc.—Haig N. Nakeshian Co., 3207 Spring Garden St., warehouse and dry cleaning plant. **$100,000.**

Tenn., Knoxville—WAREHOUSE, etc.—East Tennessee Natural Gas Co., c/o Ebasco Services, Inc., archt., 2 Rector St., New York, N. Y., warehouse and office. **$150,000.**

Tex., Houston—PLANT—Thorstenberg & Tamborello, Commerce Bldg., sand and gravel plant, 38½ acres near Underpass off Gulf Freeway. Approx. **$100,000.**

Wash., Moses Lake—DEPOT—United Freight Lines, c/o R. D. Bennion, freight depot and docks. **$100,000.**

N. S., Yarmouth—GARAGE—Yarmouth Motors, Ltd., 76 Parade St., garage. Approx. **$100,000.**

Ont., Preston—PLANT UNIT—Savage Shoe Co., Ltd., 1008 Queen St., plans by Barnett & Reider, 49 King St. E., Kitchener, 2 story, bsmnt., 75x120 ft. plant unit. Approx **$125,000.**

Ont., Toronto—WINERY—Parkdale Wines Ltd., 183 Bathurst St., plans by H. B. Kohl, 9 Richmond St. E., 1 story, rein.-con. frame winery, Queen Elizabeth Way and Alau Ave. Approx. **$500,000.** J. H. Hooper, 880 Bay St., engr.

Que., Joliette—FACTORY—Acme Glove Works, Ltd., Joliette, plans by Chevier & Belanger, 5276 Notre Dame de Grace Ave., Montreal, 2 story, bsmnt., 60x180 ft., rein.-con., brick, block factory addn. Approx. **$175,000.** Lalonde & Valois, Canada Cement Bldg., Montreal, engrs. CD 8/29.

Que., Matagami—MILL—J. U. Gauthier, 232 Stanley St., St. Lambert, 1,000 tons newsprint mill. Approx. **$500,000.**

Que., Senneterre—MILL—J. U. Gauthier, 232 Stanley St., Lambert, dissolving rayon mill. Approx. **$500,000.**

UNCLASSIFIED

Ark., DeQueen—TRANSMISSION LINES, etc.—James T. Manning, mayor, DeQueen, natural gas transmission lines and distr. sys., $504,000. H. T. Lawrence, 1802 N. W. 21 St. Oklahoma City, Okla., consult. engr. CD 4/11

Calif., Stockton—CORPORATION YARD—City, City Hall, corporation yard, **$200,000.**

Colorado—RURAL DISTRIBUTION LINES—Delta-Montrose Rural Power Lines Assoc., Delta, 109 mi. rural distr. line and sys. imprvs., Delta Co., **$460,000.** CD 12/30/48.

Colorado—RURAL DISTRIBUTION LINES—San Miguel Power Assn., Inc., Nucla, 34 mi. rural distr. line, 49 mi. 44 kv transmission line, 13 mi. 24 kv transmission line and sys. imprvs., San Miguel Co., **$470,000.** CD 11/16/44.

Ga., Atlanta—PARK IMPRVS.—City, plans by John J. Harte Co., Techwood Drive, N. W., Atlanta, Grant Park Imprvs., Approx. **$300,000.** CD 6/21/46

Illinois—RURAL DISTRIBUTION LINES—Southern Illinois Electric Co-operative, Dougalo, 109 mi. rural distr. line, 29 mi. of 69 kv transmission line and sys. imprvs., Pulaski Co., **$881,000.**

Ill., Lyons—BOWLING ALLEY—Owner, c/o Albert Kirschenbaum, archt., 53 W. Jackson St., Chicago, Zone 4, one story 14,000 sq. ft., concrete, brick, steel bowling alley, 7836 S. Ogden Ave. **$300,000.**

Mich., LaSalle—BEACH and PLAYGROUND, etc.—New Toledo Beach, Inc., c/o Virgil Gladieux, Sports Arena, Toledo, O., plans by Bellman, Gillett & Richards, 518 Jefferson Ave., Toledo, O., imprv. 250 acre site on Lake Erie, 17 mi. north of Toledo, for beach and playground resort, incl. bathhouse, black top hy., beach imprv., dance hall renovating, 500 ft. boardwalk near here, etc., $200,000.

Indiana—RURAL DISTRIBUTION LINES—Allen-Wells County Rural Electric Co-operative, Ossian, 23 mi. rural distr. lines and sys. imprvs., **$185,000.**

Kan., Great Bend—DRIVE-IN THEATRE—Haas-Flynn Theatres, Great Bend, drive-in theatre, **$75,000.**

▲ **Kentucky**—RURAL DISTRIBUTION LINES—Meade County Rural Electric Co-operative Corp., Brandenburg, 267 mi. rural distr. lines, 11 mi. 33 kv transmission line and sys. imprvs., Meade Co. **$1,230,000.**

▲ **Md., Baltimore**—ORE PIER—Baltimore & Ohio R. R. Co., A. C. Clarke, ch. engr., Baltimore and Charles Sts., Zone 1, ore pier, at Curtis Bay, **$5,000,000.**

Minnesota—RURAL DISTRIBUTION LINES—Federated Rural Electric Assoc., Jackson, 145 mi. rural distr. lines, 15 mi. 34.5 kv transmisison lines and sys. imprvs., Jackson Co. **$600,000.**

Minnesota—RURAL DISTRIBUTION LINES—Wright-Hennipin Co-operative Electric Assoc., Maple Lake, 182 mi. rural distr. lines and sys. imprvs., Wright Co. **$595,000**

▲ **Missouri**—RURAL DISTRIBUTION LINES—White River Valley Electric Co-operative, Inc., 622.6 mi. rural distr. lines and sys. imprvs., Tanney Co. **$1,025,000**

Montana—RURAL DISTRIBUTION LINES—Hill County Electric Co-operative, Havre, 468 mi. rural distr. lines, 2 way radio and sys. imprv., Hill Co., **$675,000,** J. A. Russell, Jr., Shelby, consult. engr. CD 12/13

▲ **New Mexico**—RURAL DISTRIBUTION LINES—Farmers Electric Co-operative, Inc., Clovis, 260 mi. rural distr. lines, 88 mi. 66 kw transmission line and sys. imprvs., Curry Co., **$1,275,000.** CD 1/26.

▲ **N. Y., New York**—PIER—Dpt. Marine & Aviation, Pier A, North River, Zone 4, Pier 57, 15 St. and North River. **$5,000,000-6,000,000.** Madigan-Hyland, 28-04 41 Ave., Long Island City, consult. engrs.

O., Cincinnati—STADIUM, etc.—Roger Bacon High School, Rev. Andrew Fox, principal, 4316 Vine St., stadium and lighting sys., No. 1, grading, water lines, sewer lines, tile drains, meters; No. 2, stadium and lighting sys., **$150,000.** J. R. Biedinger, Traction Bldg., consult. engr.

O., Youngstown—SWIMMING POOL—Young Womens Christian Assn., Rayen Ave., plans by Kling & Frost, 661 Wick Ave., 30x60 ft. swimming pool, Rayen Ave. and Phelps St.

Oklahoma—GAS LINES—Consolidated Gas Utilities Corp., Braniff Bldg., Oklahoma City, 41 mi. 12 in. gas lines between Enid and Blackwell and Marlow-Cement, **$478,000.**

▲ **Okla., Mustang**—GENERATOR UNIT—Oklahoma Gas & Electric Co., 321 N. Harvey St., Oklahoma City, 50,000 kw generator unit for Mustang Power Plant. **$1,000,000.**

▲ **Okla., Oklahoma City**—TRANSMISSION LINES, etc.—Oklahoma Gas & Electric Co., 321 N. Harvey St., high voltage electric transmission lines **$1,000,000**; switching stations, Reno St. **$75,000**; E. Ash St. **$102,000**; S. Broadway, **$70,000**; N. W. 39 and Ross Sts. **$90,000.**

Oregon—RURAL DISTRIBUTION LINES—Central Electric Co-operative, Inc., Redmond, 126 mi. rural distr. lines, sys. imprvs., Deschutes Co., **$540,000.**

Tennessee—RURAL DISTRIBUTION LINES—Mountain Electric Co-operative, Mountain City, 123 mi. rural distr. lines, sys. imprvs., Johnson Co., **$525,000.** CD 7/9/48.

▲ **Tenn., Nashville**—GAS LINES—Nashville Gas & Heating Co., 8 and Church Sts., extend gas service lines. **$1,000,000.**

▲ **Texas, Louisiana, Arkansas and Illinois**—PIPELINE—Trunkline Gas Supply Co., 602 Commonwealth Bldg., Wash, D. C., 740 mi. long 26 in. pipeline from near Lake Charles, La. to near Tuscola, Ill. and field branch lines involving 1,035 mi. 10 to 24 in. pipe extending as far as McAllen, Tex. **$85,000,000.** Route Changed. P. McDonald Biddison, c.p. and ch. engr., 135 S. La Salle St., Chicago 3, Ill. CD 5/10.

▲ **Texas and New York**—COMPRESSOR STATIONS, PIPELINE—Transcontinental Gas Pipe Line Corp., Oil and Gas Bldg., Houston, Tex., 10 addnl. compressor stations, between Texas and New York. **$8,500,000**; substitution of 360 mi. of 30 in. pipe for 26 in. presently authorized for sections at both ends of the line. **$42,000,000.**

Texas—TRANSMISSION LINES—Central Power & Light Co., 120 N. Chaparral St., Corpus Christi, electric power 12,000 volt transmission lines, vicinity Elsa, Edcouch, LaBlanca, LaVilla and San Carlos, **$240,000**; 14 mi. 60,000 volt transmission lines vicinity of Mision, **$90,000**; 16 mi. 60,000 volt transmission line between Mission-Rio Grande City, **$115,000.** C. P. Lear, c/o owner, engr.

Texas—RURAL DISTRIBUTION LINES—McCulloch County Electric Co-operative, Brady, 100 mi. rural distr. lines, San Saba, Brown, Mills, Menard, Concho and McCulloch Counties. **$400,000.**

Texas—OIL PIPELINE—Sun Pipe Line Co., M. Esperson Bldg., Houston, 61 mi. 4- to 10-in. crude oil pipeline between Seabreeze and Sun Station, near Galveston. **$610,000.**

Tex., Beaumont—PIER—Bethlehem Steel Co., Island Park, concrete, steel pier, adjacent to dry dock. **$450,000.**

▲ **Tex., Corpus Christi**—POWER SYSTEM—Central Power & Light Co., 120 N. Chaparral, electric power sys. extens., imprvs., **$3,600,000.**

Tex., Denison—POWER LINE—Texas Power & Light Co., Interurban Bldg., Dallas, 60,000 volt power line forming loop around city. **$100,000.**

Tex., Gladewater—BASEBALL PARK—City, voted bonds, baseball park, **$125,000.**

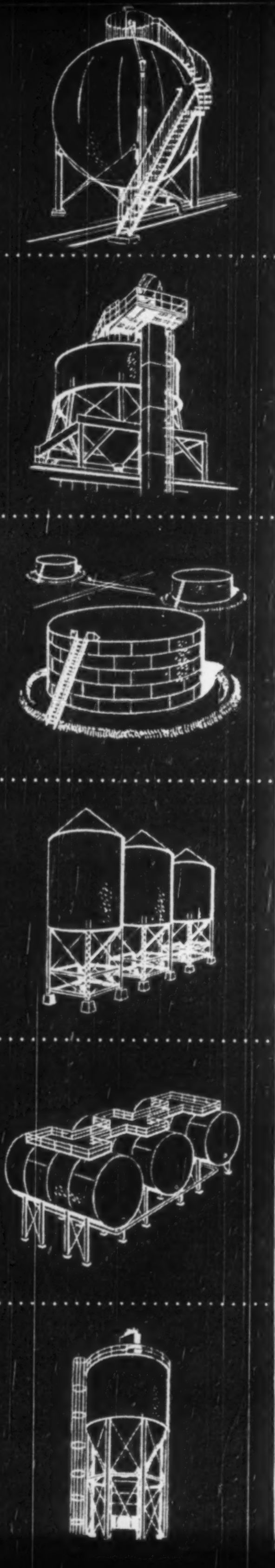
Washington—RURAL DISTRIBUTION LINES—Big Bend Electric Co-operative Inc., Mitzville, 98 mi. rural distr. lines and sys. imprvs., Adams Co., **$465,000.**

Wisconsin—RURAL DISTRIBUTION LINES—Eau Claire Electric Co-operative, Eau Claire, 89.5 mi. rural distr. line and sys. imprvs., Eau Claire Co., **$280,000** CD 5/20.

Wisconsin—RURAL DISTRIBUTION LINES—Polk-Burnett Electric Co-operative, Centuria, 241 mi. rural distr. line, Polk and Burnett Counties, **$481,000.** CD 2/28.

Wisconsin—RURAL DISTRIBUTION LINES—Trempealeau Electric Co-operative, Arcadia, 60 mi. rural distr. lines and sys. imprvs., Trempealeau Co. **$142,000.**

▲ **Que., Senneterre**—HYDRO-ELECTRIC POWER DEVELOPMENT—J. U. Gauthier, 232 Stanley St., St. Lambert, 300,000 hp. hydro-electric power development on River Nottaway north of Matagami, Approx. **$5,000,000.**



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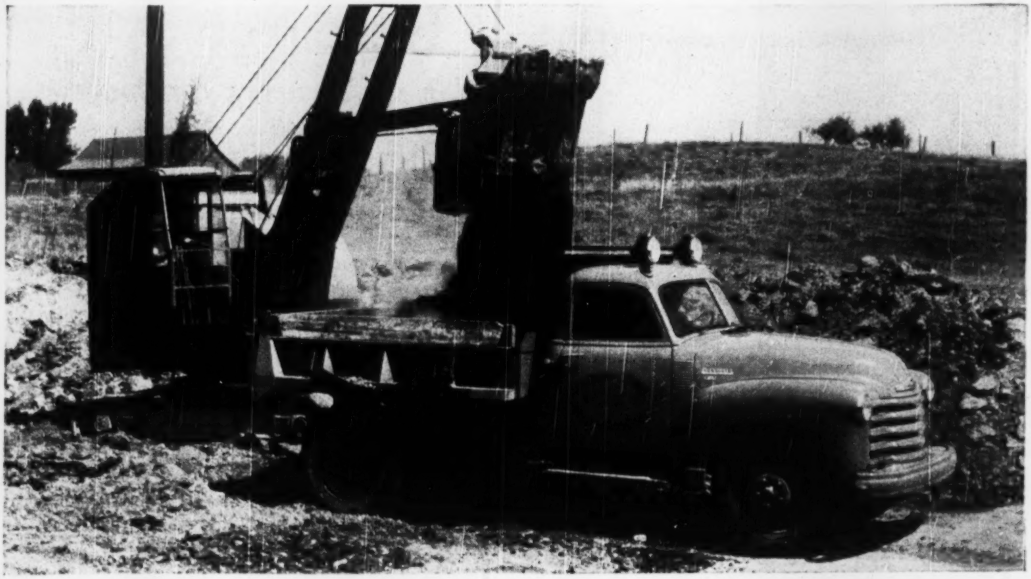

CONSTRUCTION REPORTS-Second Section

WATER SUPPLY

BIDS ASKED

Ont., Barrie—B.A. 2/6—Public Utilities Comn., W. M. Salter, mgr., 500,000 gal. water reservoir and 2 pump. stations in Bayview Park. Approx. $200,000. Plans deposit $10. Gore & Storrie, 1120 Bay St., Toronto, engrs. CD 12/15.

Fla., Niceville—B.A. 2/7—City distr. sys., incl. 38,000 lin. ft. 2- to 8-in. lines, 60,000 gal. elevated tank and 1 deep well and pump. Plans deposit $25. Robert & Co. Assoc., 96 Poplar St. N. W., Atlanta, Ga., engrs. CD 10/31/46.

Miss., Sturgis—B.A. 2/7—Town, Town Clk., deep well and pumping equip.

CONTRACTS AWARDED

▲ **Ill., Decatur**—City, City Hall, imprv. WW., Sects. B and G, switchgear and control, to Blades & Campbell, Decatur, **$38,777** and **$85,064** respectively*** Sects. B and J, furnishing 2 low lift and 3 high lift pumps, to A. F. Krall Co., Decatur, **$78,167***** Sects. A, B, D, E, and I, water treatment, dam repairs, etc., to Fisher-Stone Inc., Decatur, **$704,393** ***Sect. C, surface filter wash., to J. L. Simmons Co., Inc., Decatur, **$17,102*****Sect. H, diesel stand by, to Fairbanks Morse & Co., 600 S. Michigan St., Chicago, **$85,343*****Sect. J, tank to Chicago Bridge & Iron Co., 322 S. Michigan St., Chicago, **$167,390.** Grand total $1,076,236. Bds 11/8, awarded 12/27. CD 9/29.

SEWERS, WASTE DISPOSAL

BIDS ASKED

Ont., Toronto—B.A. 1/30—North York Twp., A. G. Standing clk., 5145 Touge St., supply and install or erect structural steel for incinerator, Keele St. Approx. $750,000. G. H. Baker, c/o owner, engr. CD 5/9.

LOW BIDDERS

▲ **Ill., Chicago**—Sanitary Dist. of Chicago, 910 S. Michigan St., Jan. 13, North Shore Intercepting Sewer, Contr. 8, Winnetka and Glencoe, from S. A. Healy & Co., 46 and S. Morgan Sts., Alt. A, **$1,487,949.**

BRIDGES

BIDS ASKED

STATE HIGHWAY LETTINGS

January 31
Maryland
February 3
Minnesota
Missouri

February 8
Louisiana
February 16
Indiana

▲ **O., Cleveland**—B.A. February—New York Central System, E. A. Dougherty, ch. engr. (lines west of Buffalo), La Salle St. Station, Chicago, 5, Ill., vertical lift bridge to replace bascule bridge over Cuyahoga River near Columbus Rd. $2,036,600. CD 5/26.

Minn., Thief River Falls—B. A. 2/7—Pennington Co, A. M. Stenstad, aud., Bridge 7038, 4 beam span, 130 ft. long, over Red Lake River, near Thief River Falls, S. P. 57-509-01 (SAR 12), Minn., Proj. S 435 (1), approx. $50,000. Plans deposit $1.10.

Pennsylvania—B.A. 2/7—Pennsylvania Turnpike Comn., 11 N. Fourth St., Harrisburg,

Beaver Co.—c. concrete substructure of Beaver River Bridge incl. land, river piers and abutment excav., in Big Beaver and North Sewickley Twps., approx. ½ mi. east of Homewood Boro, as part of Western Exten. of Pa. Turnpike Comn.

† **N. Y., Montour Falls**—B.A. About 2/22—U. S. Eng., Niagara and Bridge Sts., Buffalo, Zone 7, wid'n. Pennsylvania Railroad Bridge, Shequaga Creek, Serial No. CIVENG-30-023-50-26. CD 12/29/44.

LOW BIDDERS

California—State Div. Hys., Sacramento, Jan. 12, rein.-con. girder bridge over San Gabriel River on Florence Ave., Los Angeles, Los Angeles Co., from Davies, Keusder & Brown, 4915 Exposition Blvd., Los Angeles, **$214,916.** CD 12/19.

Florida—State Rd. Dpt., Tallahassee, hydraulic embankment approaches, stabilizing, 6 in. single course Miami rock base bit., one bridge 1,513 ft. long concrete deck girder spans on concrete caps and concrete piling with electrically operated trunnion-type bascule span and steel I-beam spans adjacent to bascule piers, small drainage structures, 1.155 mi. State Rd. 502, Indian River Bridge and approaches in Vero Beach, S-267 (1), Job 8803-201 8803-104, Indian River Co., from Cleary Bros. Constr. Co., West Palm Beach, **$608,289.**

Nebraska—State Dpt. Roads & Irrigation, Lincoln, and City of Omaha, City Hall, 18 and Farnam Sts., Omaha, Q St. viaduct FA—FAGM-501, Douglas Co., from Condon-Cunningham Co., 4229 Lafayette St., Omaha, **$801,112.** CD 12/28.

New Hampshire and Vermont—State Hy. Dpt., Concord, N. H., Jan. 12, 404 ft. twin span steel through truss bridge over Connecticut River U. S. Route 2, in towns of Lancaster, Merrimack Co., N. H. and Guildhall, Essex Co., Vt., approach is 0.094 mi. road mix pavement and 0.857 mi. surf. treated gravel, from W. H. Hinman, Inc., North Anson, Me., **$261,022.** CD 12/27.

Washington—State Hy. Dpt., Olympia, cancelled bids to have been opened Jan. 24, reconst. timber frame trestle over North Latah Creek, 0.015 mi. Secondary State Hy. No. 3-H, in Tekoa, Whitman Co. CD 1/11.

CONTRACTS AWARDED

California—State Div. Hys., Sacramento, steel girder bridge over San Leandro Creek and tracks of S. P. Company at south city limits, Oakland, Alameda Co., to C. B. Tuttle Co., 268 Belmont Ave., Long Beach, **$680,741.** Bids 1/5. CD 1/10, under LB.

La., New Orleans—New Orleans Railroad Terminal Bd., c/o contractor, 1,630 ft. concrete, steel North Calvez St. Overpass over Press St. Railyards, to R. P. Farnsworth & Co., 1515 St. Salcedo St., **$613,177.** Bids 1/10. CD 1/17, under LB.

North Dakota—State Hy. Dpt., Bismark, triple 10x12 ft. rein.-con. box culvert, 172 ft. overall length I-beam bridge and 162 ft. overall length I-beam overhead structures, State Hy. 28 between junction with State Hy. 25 near Stanton and the Garrison Dam, SAP No. SPA 500, Mercer Co., to Swingen Constr. Co., 213½ N. 4 St., Grand Forks, **$117,294.** Bids 1/13. CD 12/21.

New Brunswick—Dpt. P. Wks., Fredericton, substructures, approaches, Northwest Miramichi Bridge, Newcastle, to R. A. Blyth Constr. Co., 7 St. Andrews Gardens, Toronto, Ont. Approx. **$400,000.** CD 11/10.

STREETS AND ROADS

BIDS ASKED

STATE HIGHWAY LETTINGS

January 31
Colorado
February 2
New Jersey
February 3
Minnesota
Missouri

February 7
Massachusetts
February 8
Delaware
Louisiana
February 16
Indiana

February 22
Louisiana

La., Alexandria — B. A. 2/6 — City, c/o City Engr., various street imprvs. CD 11/17.

† **N. C., Camp Lejeune**—B. A. 2/17—Pub. Wks. Office, Bldg. No. 1005, Marine Barracks, Camp Lejeune, resurf. certain asphalt roads and parking areas at the Marine Barracks, Spec. 23279. Plans deposit $10.

LOW BIDDERS

California—State Div. Hys., Sacramento, Jan. 11, grading 3.6 mi. between 4.2 mi. and 0.4 mi. west of U. S. Rte. 395 about 6 mi. north of Coleville, Mono Co., from Westbrook & Pope, 2331 Fair Oaks Blvd., Sacramento, **$88,051;** plant mix surf. 1 mi. on imported base material between Frenchman's Creek and 1 mi. north, San Mateo Co., from Eugene G. Alves, Rt. 1, Box 390, Pittsburg, **$82,816.** CD 12/19.

Louisiana—State Dpt. Hys., Baton Rouge, Jan. 11, local sand clay grav. surf. 3.148 mi., small drainage structures creosoted timber trestle bridges etc., Sandy Lake-Manifest Hy., located on State Rte. 259, S. P. 353-03-04, Catahoula Parish, and grading, small drainage structures, four 24 ft. rein. con. deck girder bridge, grav. base course, 3 application bit. surf. tr., etc., 11.266 mi. Lums-Coleman Hy., located on State Rte. 1126, S. P. 182-01-03 Federal Aid Secondary Proj. S-58 (3), Madison Parish, from W. R. Aldrich & Co., Box 1751, Baton Rouge, **$112,647** and **$349,696,** respectively; shaping roadway, drainage structures, grav. base course, 18 and 20 ft. bit. surf. tr., etc., 12.559 mi., Glynn-Pattin Hy. located on State Rtes. 20-C-1 851 and 139, S. P. Nos. 224-01-03 and 227-04-05, Pointe Coupee Parish, from Carruth Contr. Co., Box 2191, Baton Rouge, **$278,013,** CD 12/29.

La., Plaquemine—Town, Town Hall, Jan. 10, street imprvs., from T. L. James & Co., Inc., Ruston, **$513,905.**

▲ **Pennsylvania**—State Hy. Dpt., Harrisburg, Jan. 13, wid'n. pavement with c. conc. and crushed stone base 6 ft., 8 ft., and 14 ft. in width left and right, replacing existing center lane with c. conc. base special mix 10 ft. wide; bit. surf. new base and existing pavement, incl. exten. 2 concrete structures, construct crushed stone base with bit. surf., extens. 2 bridges 19,246 ft. L.R. 142 (22); 15094 (3), T.R.U.S. 30 between Downingtown and Exton, Chester Co., from James J. Skelly Co., Media, **$436,816***** rein.-con. paving, incl. constructing 4 rein.-con. structures and crushed stone base with bit. surf. 35,027 ft. L.R. 215 (3); 274, 15214. T.R. 41, T.R.U.S. 122 from near Chatham to near Cochranville, Chester Co., from James D. Morrissey, Inc., 9119 Frankford Ave., Phila., **$820,814*****wid'n pavement with c. conc. base and crushed aggregate base, bit. surf. new base and existing pavement; bit. surf. crushed aggregate base, 19,864 ft. L.R. 380 (3R), T.R. 68 from Clarion-Forest Co. line to point 1.8 mi. from Marionville, Forest Co., from Tri-State Asphalt Corp., Martins Ferry, O., **$112,146*****bit. surf. crushed aggregate base, incl. constructing rein.-con. box 19,400 ft. L.R. 63 (R-4). T.R. 36, northwest of Punxsutawney Boro Jefferson Co. from M. Bennett & Sons, 19½ N. Sixth St., Indiana, **$447,060*****construct rein.-con. pavement, incl. exten. 2 rein.-con. structures, wid'n. existing pavement with c. conc. base and bit. surf., construct 1 rein.-con. bridge 11,900 ft. L.R. 88 (11). T.R.U.S. 6 between Youngsville and Warren Boro, Warren Co., from The Baldwin Brothers Paving Co., 1690 Union Commerce Bldg., Cleveland 14, O., **$322,476.** CD 12/28.

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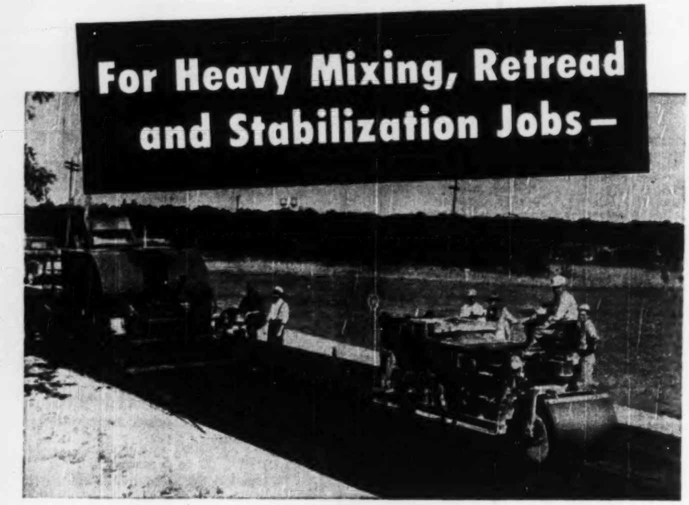

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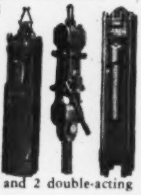

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† **Tenn., Oak Ridge**—U. S. Atomic Energy Comn., P. O. Box 3, community traffic artery, which will directly link Scarboro Rd. with Illinois Ave. at the Turnpike, will be known as South Illinois Ave., from Harrison Constr. Co., Maryville, **$147,727**. CD 12/7.

Tex., Houston—City, City Hall, 900 Brazos St., Jan. 11, asph. paving Montrose Blvd., from Gulf Bitulithic Co., 2820 Polk St. **$148,391**. Est. $190,000. W. A. Ortelani, National Standard Bldg., engr.

CONTRACTS AWARDED

Kansas—State Hy. Dpt., Belleville, grading 6.905 mi. Proj. 36-79-F 92 (4) and 0.496 mi. Proj. 36-79 F 92 (5), Republic Co., to Harry Henery, Inc., Ottawa, **$179,149**; grading 5.564 mi. and R. C. B. Bridge 15-57-2.2, and three—4x9x32 ft., Station 102 plus 25, Proj. 15-57 F 574 (6), Proj. 15-57 F 574 (6) Marion Co., to Frank Benbow, 1303 High St., Wichita, **$53,515**. Bids 1/6. CD 12/23.

Kansas—State Hy. Comn., Stockton, grading 3.756 mi. Proj. 24-71 F 170 (6), Osborne Co., to Watson-Coffey, National Bank Bldg., Topeka, **$74,104**; c. conc. 0.605 mi. Proj 183-82 F 204, (15), Rooks Co., to M. W. Watson, National Bank Bldg., Topeka, **$104,340**. Bids 1/5. CD 12/23.

La., New Orleans—City, Purch. Agt., City Hall, street surf. proj. subsurf. drainage proj. Proposals 12,563 through 12,566, 12,568 through 12,572, and 12,576, 12,577 and 12,580, to Boh Bros. Constr. Co., 2400 Cypress St., **$424,918*****Proposals 12,573, 12,574, 12,582, 12,586 and 12,587, to Lang Co., 2500 Poydras St., **$262,013*****Proposals 12,581 and 12,583 through 12,585, to Texas Bitulithic, Burma Rd., **$194,746**, Grand total $881,677, Bids 1/11, awarded 1/13, CD 1/6.

O., Columbus—City, Elmer A. Keller, Service Dir., City Hall, 90 W. Broad St., imprv. Mound St. between Central and Whitehorne Aves., to A. W. Burns Constr. Co., 424 Woodland St., **$12,176**. CD 9/18/44.

Pennsylvania—State Hy. Dpt., Harrisburg, wid'n, pavement with c. conc. base 22 to 28 ft., bit. surf. new base and existing pavement 44 to 50 ft. wide; bit. surf. existing pavement; construct c. conc. base with bit. surf. and two I-beam bridges 15,083 ft. L.R. 258 (1) T.R. 99, U. S. 19 in city of Erie, South, Erie Co., to Charles H. Fry Constr. Co., 1902 Cherry St, Erie, **$574,105**. Bids 12/9, awarded 1/13. CD 12/14, under LB.

Va., Virginia Beach—Town, street imprvs., to W. H. Scott, Franklin, **$136,849**. CD 2/28/49.

† **Washington**—U. S. Eng., 4735 E. Marginal Way, Seattle, Zone 4, access highway to Chief Joseph Dam site, Okanogan Co., Serial No. CIVENG-45108-50-38, Schedule A, clearing, grading placing ballast and crushed stone surf. stockpiling of mineral aggregate an dconstr. small drainage structures to Strong & Macdonald Inc., 4045 Ruston Way, Tacoma, **$612,215**. Bids 12/21. CD 12/31, under LB.

EARTHWORK, WATERWAYS

BIDS ASKED

† **Oregon**—B.A. 2/10—U. S. Eng., 19 E. Poplar St., Walla Walla, Wash., tailwater gaging station on Columbia River, McNary Dam, CIVENG-45-164-50-81.

LOW BIDDERS

▲† **Colorado**—Bureau Reclamation, Dpt. Interior, Bldg. 1-A, Denver Federal Center, Denver, Colo., Jan. 10, constr. earthwork, concrete lining and structures for Poudre supply canal Station 18 plus 51.96 to 294 plus 00, Colorado-Big Thompson Proj., Spec. 2855, from Peter Kiewit Sons, Co., 1950 South University, Denver. **$1,216,699**. Est. $1,258,926. CD 1/4.

† **Georgia**—U. S. Eng., P. O. Box 1169, Mobile, 7, Ala., rejected bids Dec. 29, constr. radio telephone system for Allatoona Dam, Etowah River, Serial No. CIVENG-01-076-50-32. Will re-advertise. CD 12/20.

† **Louisiana**—U. S. Eng., Vicksburg, Miss., Jan. 10, Bayou Lafourche imprv. reach 3, Mile 11 to Mile 17, channel excav. and realignment, Caldwell Parish, CIVENG-22-052-50-96, from Atlas Constr. Co., Waxahachie, Tex. **$496,280**. CD 12/16.

† **Louisiana**—U. S. Eng., foot of Prytania St., New Orleans, Zone 9, Jan. 11, approx. 8,450 lin. ft. standard board revetment, located on and adjacent to left descending bank of Red River, Mile 315.0 (1930) in Bossier Parish, about 5 mi. above Bossier City. CIVENG 16-047-50-178, from Markham & Brown and L. L. Sanders, Cape Girardeau, Mo. **$364,310**. CD 12/28.

▲ **Pennsylvania**—Dpt. Forests & Waters, 404 Education Bldg., Harrisburg, Jan. 17, Tamaqua silt impounding basin in Schuylkill River Desilting Proj. near West Penn on Little Schuylkill River, Schuylkill Co., from S. J. Groves & Co., Downingtown, **$131,990**, est. $300,000; dredging, floodway clearing and excavation in River Sect. III of Schuylkill River Desilting Proj., Berks and Chester Counties, from Eastern Eng. Co., 4 N. North Carolina Ave., Atlantic City, N. J., **$2,083,467**, est. $2,500,000. CD 1/5.

† **Texas**—U. S. Eng., 606 Santa Fe Bldg., Galveston, Jan. 10, repairing North and South Jetties at Arkansas Pass, near town of Port Aransas, Aransas and Nueces Counties. CIVENG-41-243-50-98, from D. E. Picton & Co., Inc., 603-4 Adams Bldg., Port Arthur. **$438,214**. Est. $375,894. CD 12/20.

CONTRACTS AWARDED

▲† **California**—Bureau Reclamation, Dpt. Interior, Goleta, Schedule 3, constr. Tecolote tunnel and access road, about 10 mi. west of Santa Barbara, Santa Barbara Proj., Spec. 2851, to Carl M. Halvorson, Inc., Builders Exchange Bldg., and H. Halvorson, Inc., 5103 N.E. 42 St., both Portland, Ore. **$4,750,455**. Est. $4,169,525. Bids 12/29, awarded 1/9. CD 1/10, under Unclassified, LB.

▲ † **California**—Bureau Reclamation., Box 570, Tracy, earthwork, structures, Sta. 4535.00 to Sta. 5485.50 Delta-Mendota Canal and Firebaugh wasteway, vicinity of Firebaugh Central Valley Proj., Spec. 2857, to United Concrete Pipe Corp. and Vinnell Co., Inc., 1145 Westminister Ave., Alhambra. **$3,067,484.** Bids 1/5. CD 1/10, under LB.

† **Mississippi and Arkansas**—U. S. Eng., P. O. Box 97, Memphis, Tenn., 1,140,000 cu. yd. riverside enlargement, roadway embankment and berms, Flower Lake, Miss., L-671, approx. stations 45/0-49/0 along left bank of Mississippi River, in Tunica Co., Miss., beginning at point approx. 4 mi. N. W. of Clayton, Miss., and exten. S. W. down levee approx. 4 mi to point approx 6 mi. N. W. of Dundee, Miss.; 680,000 cu. yd. riverside enlargement roadway embankment and berms, Laconia, Ark., R-603, approx. stations 54/53-53/14, along right bank of Mississippi River in Desha Co., Ark., beginning at point where Laconia Circle levee ties in to Mississippi River levee, said point being approx. 5 mi. S. of Phillips-Desha Co. line and about 5½ mi. S. E. of Snow Lake, Ark., exten. S. W. down Mississippi River Levee approx. 4½ mi., CIVENG 40-041-50-69, to Forcum-James Co., Dyersburg, Tenn., **$439,760.** Bids 12/20. CD 11/23.

▲† **Texas**—U. S. Eng., 606 Santa Fe Bldg., Galveston, spillway constr., Lavon Dam and Reservoir Proj., Trinity River and tributaries, 7 mi. north of Rockwall, Inv. No. CIVENG-41-243-50-78, to Texas Constr. Co., 505 N. Ervay St., Dallas. **$1,970,235.** Bids 12/22, awarded 1/13. CD 1/4, under LB.

† **Washington**—Bureau Reclamation, Dpt. Interior, Coulee Dam, Wash., Schedules 1 and 2, earthwork and structures for West Canal, Sta. 1229 plus 74 to 1992 plus 50, Quincy pump lateral and excavation for Quincy pumping plant, Columbia Basin Proj., Spec. 2844, to Marshall, Haas and Royce and Haas & Rotnchild, Belmont, Calif. **$983,631.** Bids 12/21, awarded 1/10. CD 1/4, under LB.

AIRPORTS

BIDS ASKED

Ill., Chicago—TERMINAL—B. A. 1/31—City, Dpt. P. Wks., City Hall, Zone 2, 185x350 ft., steel, brick limestone terminal bldg., Finger B, for O'Hare Field, Chicago International Airport, $900,000. Plans deposit $100. Skidmore, Owing & Merrill, 100 W. Monroe St., Zone 3, archts. Ralph H. Burke, 20 N Wacker St., Zone 6, engr. CD 11/25.

O., Dayton—AIRPORT IMPRVS.—B.A. 2/2—City, Municipal Bldg., imprv. roadways and installing lighting and fencing at Dayton Municipal Airport. CD 10/23/45.

† **N. M., Roswell**—LIGHTING—B. A. About 2/9—U. S. Eng., P. O. Box 1538, Albuquerque, reconstructing airfield lighting sys., Walker Air Force Base A-91. Serial No. Eng-29-005-50-31.

† **Alaska, Anchorage**—HANGAR—B. A. 2/15—Fish and Wildlife Service, Dpt. Interior, 3247 Interior Bldg., Wash. 25, D. C., airplane hangar and seaplane landing ramp.

LOW BIDDERS

▲ **Calif., San Francisco**—RUNWAYS, etc.—Public Utilities Comn., City Hall, Jan. 10, paving runways, grading, etc. at San Francisco Airport, near San Bruno, Spec. 120, from Morrison-Knudsen Co. Inc., 1 Montgomery St., **$2,595,053.** CD 12/23.

CONTRACTS AWARDED

▲ † **Va., Langley Field**—LABORATORY—National Advisory Com. for Aeronautics, Langley Field, gas dynamics and internal flow laboratory, to Rust Eng. Co., 575 6th Ave., Pittsburgh, Pa., **$3,620,449.** Bids 12/20. CD 12/28, under LB.

LATIN AMERICA

Brazil, Rio de Janeiro—Secy. General Ministry of Pub. Wks., Ave. Nilo Pacanha 12, receiving bids, destruction Santo Santonio Hill. CD 10/7, under LB.

PUBLIC BUILDINGS

BIDS ASKED

Minn., Rochester—PLANT—B.A. 1/31—State Dpt. Admin., P. T. Petersen, dir. Purchases, 1 State Capitol, 1 story, bsmnt. power plant and service facilities. Approx. $250,000. Plans deposit $30. Ellerbe & Co., E. 505 First National Bank Bldg., St. Paul, archts. CD 10/17/47.

▲ **Tex., Austin**—CLASSROOM—B.A. In February—University of Texas, c/o Bd. Regents, three 5 story semi-fireproof classroom bldgs., incl. utilities, landscaping etc., $3,000,000. Staub & Rather, 2814 Virginia Ave., Houston, and Mark Lemmon, 1210½ Main St., Dallas, archts. Francis J. Niven, 3908 Main St., Houston, consult. engr. CD 11/16.

▲ **Minn., Wayzata**—SCHOOL—B.A. 2/1—Bd. Educ., C. H. Meyer, clk., 3 story school. $1,000,000. Baxby, Bissell & Belair, 1111 Nicollet Ave., Minneapolis, archts. CD 1/11.

Wash., Auburn—SCHOOL—B.A. 2/2—School Dist. 408, 9420 S. 249 Pl., 2 and 1 story, 259x445 ft., monolithic concrete Senior High School. $800,000. Mallis, DeHart & Hopkins, Lyon Bldg., Seattle, Zone 4, archts. CD 3/17/48.

Calif., Los Angeles—AUDITORIUM—B.A. 2/3—Los Angeles Junior College Dist., 1 story, bsmnt., 122x267 ft., rein.-con., auditorium at East Los Angeles Junior

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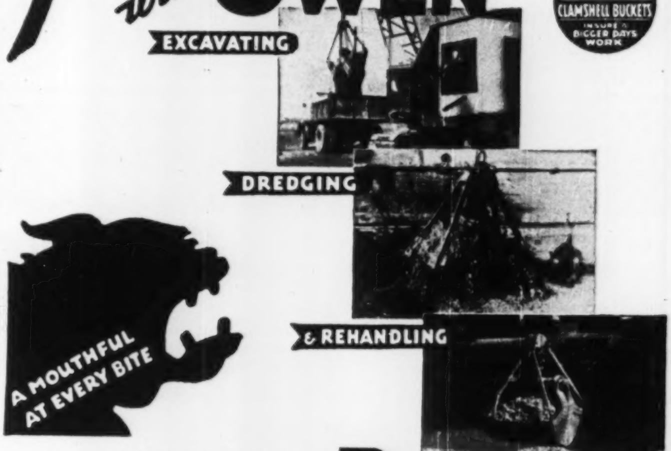

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College, 5357 Brooklyn Ave., East Los Angeles. $630,000. George & Robert Lindsey, 631 N. Figueroa St., archts. CD 7/8/48.

Ont., Barrie—SCHOOL—B.A. 2/3—A. H. Felt, secy. Bd. Educ., 39 Ross St., 1 story, brick, tile, concrete block, Codrington St. Public School. Approx. $250,000. Plans deposit $25. S. B. Coon & Son, 4 St. Thomas St., Toronto, archts. CD 12/1.

Ky., Frankfort—SCIENCE—B.A. 2/7—Commonwealth of Ky., Frankfort, 2 story; bsmnt., brick science bldg., Kentucky State College for Negroes, $400,000. Plans deposit $25. Julian C. Oberwarth, 301 W. 2 St., archt.

La., Baton Rouge—AUDITORIUM, etc.—B.A. 2/7—East Baton Rouge Parish School Bd., Baton Rouge, auditorium, gymnasium, cafeteria, music bldg., Istrouma High School. Plans deposit $40. Bodman & Murrel, 713 Reymond Bldg., Baton Rouge, archts. CD 5/4/44.

Tex., Midland—SCHOOL—B.A. 2/7—Midland Independent School Dist., Midland, Northeast School. $300,000. Wilson & Patterson, 208 Majestic Bldg., Fort Worth, archts.

Wash., Bellingham—LIBRARY—B.A. 2/7—Bellingham Public Libraries, Bellingham, 2 story, 75x170 ft., rein.-con, brick library $40,000. Plans deposit $25. Extended date. Naramore, Grady, Bain & Johanson, Dexter Horton Bldg., Seattle, Zone 4, archts. CD 11/23.

† **Washington** — RESIDENCES — B.A. 2/8 — Bureau Reclamation Dpt. Interior, Ephrata, Wash., 22 two-bedroom and 23 two bedroom residences with sleeping porches for OM headquarters at Quincy and Othello, Columbia Basin Proj., Spec. R1-CB-36 (Region 1). L. N. McClellan, Bldg. 1-A, Denver Federal Center, Denver, Colo., ch. engr.

LOW BIDDERS

▲ **Calif., Sacramento** — HOSPITAL — Sacramento Co., Courthouse rejected bids Dec. 21, 4 story, rein.-con. steel 400-bed county hospital addn. L.B. **$1,186,000.** CD 12/29, under LB.

Idaho, Pocatello—GYMNASIUM, etc.—State Dpt. P. Wks. Boise, Jan. 10, 180x300 ft., rein.-con., brick gymnasium and swimming pool, from C. H. Elle Constr. Co., 390 Monroe Ave. **$981,500,** est. $1,000,000. CD 12/8.

▲ **Ia., Newton**—SCHOOL—Ind. School Dist., Newton, cancelled bids to be opened Mar. 8, high school, **$1,200,000,** Revising plans. Keffer & Jones, 202 Masonic Temple Bldg., archt. CD 12/30.

▲† **N. M., Albuquerque**—LABORATORY—U. S. Eng., Box 1538, Jan. 10, A-19, laboratory, Sandia Base, Serial No. 291-50-24, from J. W. Bateson Constr. Co., 1102 Irwin-Keasler Bldg., Dallas, Tex., **$2,056,800.** CD 12/19.

CONTRACTS AWARDED

Ky., Bowling Green — HOSPITAL — Oval Motley, clk. Warren Co., general contract Bowling Green-Warren Co. Hospital, to W. R. Smith & Son, 316-318 12 Ave., Nashville 2, Tenn., **$428,649.** (Correction—contractor). CD 12/28, under CA.

▲ **Md., Baltimore**—SCHOOL—City, Bureau Bldg. Constr., 410 Municipal Bldg., Zone 2, 3 story, 70x252 ft. and 52x176 ft. T-shaped, brick, cinder block, concrete West Baltimore Negro School, Saratoga and Schroeder Sts., to Costanza Constr. Co., 225 E. Redwood St., **$1,023,450.** Bids 1/4, awarded 1/11. CD 1/12, under LB.

▲ **Pa., Phila.** — YOUTH STUDY CENTER — Comrs., Phila. Co., City Hall, youth study center, to McCloskey & Co., 1620 W. Thompson St., **$1,592,770.** CD 1/12, under LB.

▲† **Tenn., Oak Ridge**—HOUSING—U. S. Atomic Energy Comn., P. O. Box 265, 450 new multi-family dwellings units, Inv. No. 401-50-1A to T. C. Bateson Constr. Co., 622 Irwin-Keasler Bldg., Dallas, Tex., **$3,445,500.** Bids 12/21. CD 12/29, under LB.

Ont., Belleville—HOME—Hastings Co., Belleville, home for aged, incl. 8 bldgs., to M. Sullivan & Son, Ltd., 234 Elgin St., Arnprior. Approx. **$943,000.** Bids 12/22. CD 12/1.

COMMERCIAL BUILDINGS

BIDS ASKED

Ga., Cedartown—CHURCH, etc.—B. A. 1/31—First Baptist Church c/o Bothwell & Nash, archts, 206 Roswell St., Marietta, joint church and Sunday school, $350,000. Extended date. CD 12/21.

Ill., Chicago—CHURCH—B. A. 2/1—Epiphany Church, 2524 S. Keeler St., 1 story, bsmnt., steel, brick church. $300,000. Edw. Schulte, 920 E. McMillan, Cincinnati, O., archt.

N. C., Salisbury—CHURCH—B. A. 2/1—First Baptist Church, Salisbury, church. Approx. $250,000. Charles C. Benton & Sons, Wilson, archts. CD 7/21/48, under LB.

Ala., Montgomery—CHURCH—B. A. 2/2—Cloverdale Baptist Church, c/o Raymond Sizemore, archt., 16 S. Hull St., church. Plans deposit $15.

D. C., Wash.—CHURCH—B. A. 2/2—Murphy & Locraft, archts. 1518 P St. N. W., church and rectory, for St. Thomas The Apostle Church, 2710 27 St. N. W. Approx. $250,000.

▲ **Ont., Toronto**—HOSPITAL—B. A. 2/3—A. Cohen, chn. Bldg. Comn., c/o Mount Sinai Hospital Bd., 105 King St. W., structural steel work on site of new Mount Sinai Hospital, University and Elm Sts. Approx. $1,500,000. Govan, Ferguson, Lindsay, Kamimker, Maw, Langley & Keenleyside, 17 Davenport Rd., archts.

N. Y., Brooklyn—SCHOOL, etc.—Bids Asked—Our Lady of Peace Roman Catholic Church, 522 Carroll St., school and gymnasium, 215 First St. $250,000. William J. Boegel, 516 Fifth Ave., New York, archt.

SOON LETS CONTRACT

▲ **O., Cleveland** — DEPARTMENT STORE — Charles N. Agree, archt., 1140 Book Bldg., Detroit, Mich., soon lets contract 1 story, bsmnt., approx. 100x300 ft., brick, steel department store and paving, Lee and Harvard Rds. for Federal Department Stores, 444 Willis St., Detroit, Mich. **$1,000,000.** CD 11/21.

LOW BIDDERS

Wash., Bellevue—HOUSES—Veterans Mutual Bldg. Assn., c/o Chiarelli & Kirk, and Bassetti & Morse, archts., 2 and Cherry Bldg., Seattle, Zone 4, rejected bids Jan. 5, 54 houses in Norwood Village, L. B. **$697,130.** CD 1/10, under LB.

CONTRACTS AWARDED

▲ **Ala., Birmingham**—HOMES—White Homes, inc., c/o contractor 500 homes, to West Hills Constr. Co., 218 N. 21 St., Birmingham. Approx. **$1,000,000.**

▲ **Ala., Montgomery**—HOMES—Folmar & Flinn, 2201 S. Ferry St., 243 homes. Owner builds. Approx. **$100,000,000.**

▲ **Calif., Compton** — DWELLINGS — Barhugh Estates, 9439 Long Beach Blvd., Long Beach, 330 frame, stucco dwellings on Tract 15981, and 204 frame, stucco dwellings on Tract 16108, at Central and Olive Sts., to Biltmore Homes, 9434 Long Beach Blvd., Long Beach, Approx. **$2,640,000** and **$1,632,000** respectively.

▲ **Calif., San Mateo**—RESIDENCES—Newbridge Park Realty Co., 1420 E. 3 Ave., 560 single family residences Shoreview No. 9 to Belle Haven Realty Co., 821 Market St., San Francisco. Approx. **$4,000,000.** Oleg Ivansitsky, 251 Kearny St., San Francisco, archt. CD 2/14.

▲ **D. C., Wash.**—OFFICE—Virginia Hotel Co., 1107 I St. N. W., 13 story office, 14 and H Sts., and New York Ave. N. W., to Charles H. Tompkins Co., 907 16 St. N. W. Est. **$1,800,000.** Bids 12/1, awarded 1/10. CD 12/16, under LB.

▲ **Ga., Fort Benning**—HOUSING—Commanding General, Fort Benning, construct, manage and finance 600 rental housing units, to be known as Custer Road Terrace, to Jordan Contg. Co., Andrews Rd., Columbus, **$5,700,000.** Contractor will build. CD 10/19.

▲ **Ill., Chicago**—APARTMENT—Barry-Briar Corp., c/o J. J. Mack, 505 N. Michigan St., 14 story, brick, rein.-con. apartment 3101 N. Sheridan Rd., to Sherry Richards Co., 201 N. Wells St. Approx. **$2,700,000.** Shaw, Metz & Dolio, 208 S. LaSalle St., archts.

▲ **Kan., Kansas City**—APARTMENT—I. E. Millstone, 4343 Clayton St., St. Louis, Mo., 200 unit apartment. Owner builds, **1,000,000,** Herman Guttman, Ojai, Calif., archt.

▲ **N. J., Erlton**—RESIDENTIAL DEVELOPMENT—New Era Constr. Co., 509 White Horse Pike, Haddon Heights, 400 unit residential development, separate contracts, **$3,000,000.** W. D. Faint & Co., 1915 Browning Rd., Pennsauken, archts.

▲ **N. J., Haddon Heights**—RESIDENTIAL DEVELOPMENT—New Era Constr. Co., 509 White Horse Pike, 500 unit residential development, separate contracts. **$4,000,000.** W. D. Faint & Co., 1915 Browning Rd., Pennsauken, archts.

▲ **N. J., Pennsauken**—RESIDENTIAL DEVELOPMENT—New Era Constr. Co., 509 White Horse Pike, Haddon Heights, 400 unit residential development, separate contracts. **$3,000,000.** W. D. Faint & Co., 1915 Browning Rd., archts.

▲ **N. J., Westmont**—RESIDENTIAL DEVELOPMENT—New Era Constr. Co., 509 White Horse Pike, Haddon Heights, 400 unit residential development, separate contracts. **$3,000,000.** W. D. Faint & Co., 1915 Browning Rd., Pennsauken, archts.

▲ **N. J., Woodbury**—RESIDENTIAL DEVELOPMENT—New Era Constr. Co., 509 White Horse Pike, Haddon Heights, 500 unit residential development, separate contracts. **$4,000,000.** W. D. Faint & Co., 1915 Browning Rd., Pennsauken, archts.

▲ **N. Y., New York**—HOSPITAL— and MEDICAL CENTER—New York University, Washington Square, hospital and medical center, 31 to 33 Sts., First Ave. to Franklin D. Roosevelt Dr., to John Lowry, Inc., 52 Vanderbilt Ave., Zone 17. Approx. **$35,000,000.** CD 1/19/49.

▲ **O., Cleveland**—HOMES—Konomee Homes, 3071 W. 46 St., 100 one story, bsmnt., frame homes, separate contracts. **$1,000,000.**

▲ **O., Garfield Heights**—HOMES—Gaudreau Builders Corp., 12012 Shady Oak Blvd., 114 one story, bsmnt., frame homes, Shady Oak Blvd. separate contracts. **$1,140,000.**

▲ **O., Toledo**—HOUSING—Kenwood Gardens, Inc., c/o Alfred I. Soltz, Leader Bldg., Cleveland, 72 two story, brick garden type apartments, on 49 acre site bounded by W. Central Ave., Kenwood Blvd., Aldringham Blvd. and Toledo Terminal R. R., storm sewers, 26 ft. wide streets, sidewalks. Owner builds. **$4,500,000.** Weinberg & Teare, Shofield Bldg., Cleveland, archts. Porter W. McDonnell, Commerce Bldg., consultant.

▲ **Pa., Westmont (near Johnstown)**—SHOPPING CENTER, etc.—Westmont Realty & Development Corp., 140 2 Ave., Johnstown, 2 story, brick shopping center, theater, to Ralph Willett, Parkview Dr., Johnstown. Approx. **$2,500,000.** R. J. Haberstroh, 2 Ave., Johnstown, engr.

▲ **Tex., Dallas**—RESIDENCES—Moody & Tips, 701 Forest Ave. Rd., 100 addnl. residences, own forces. Approx. **$1,200,000.**

▲ **Tex., Dallas**—DWELLINGS—Vernon & James Smith 2153 Fort Worth Ave., 225 dwellings, force account. Approx. **$1,350,000.** CD 1/6.

▲ **Que., Montreal**—BUNGALOWS—Standard Homes, Ltd., 8140 Cote St. Luc Rd., 400 bungalows, own forces. Approx. **$1,000,000.**

INDUSTRIAL BUILDINGS

BIDS ASKED

S. C., Greenville—SHOP, etc.—B.A. 1/31—Abbott Machine Co., c/o J. E. Sirrine Co., archt., 215 Main St., shop and office. Approx. $68,000.

▲ **Ont., Toronto**—PLANT—B.A. 2/6—T. Pringle & Sons, Ltd., engrs., 485 McGill St., Montreal, Que., superstructures of 3 story, main plant section and 2 story portion for offices of plant, Birchmount Ave. Approx. $2,000,000. CD 5/20.

SOON LETS CONTRACT

Calif., San Jose—WAREHOUSE—Barron-Gray Div. Hawaiian Pineapple Co., 5 and Martha Sts., soon lets contract 276x440 ft., concrete warehouse. Approx. $68,000. Wm. D. Lotz, 35 W. San Carlos St., engr.

▲ **N. J., Merchantville**—PLANT—Kieckhefer Container Co., 130 N. Broadway, Camden soon lets contract mfg. Plant. $1,000,000. Carson & Carson, 16 S. Broad St., Phila., Pa., engrs.

▲ **Tex., Freeport**—AMMONIA PLANT—Dow Chemical Co., Freeport, soon lets contract ammonia plant. $4,000,000. Dr. A. P. Beutel, c/o owner, engr. CD 1/12.

LOW BIDDERS

Minn., Elk River—PLANT FITTINGS—Rural Cooperative Power Assn., Maple Lake, Jan. 5, furnishing, erecting piping, valves, fittings, and miscellaneous related equip. in power generating plant under constr., near here, from Tyner Engr. Co., Mitchell, S. D., **$405,000.** CD 12/21.

CONTRACTS AWARDED

Tex., Galveston—PLANT—Galveston Wharves, Inc., 2402 Mechanic St., 5 story, 100x175 ft. tea plant, to Tellepsen Constr. Co., 1710 Telephone Rd., Houston, **$705,016.** Est. $500,000. Lipton Teal Co., 2324 Strand St. lessee. Bids 1/13. CD 1/11.

Tex., Houston—WAREHOUSE—Hyman & Aarón Finger & Assoc., 1601 San Jacinto St., No. 2 warehouse unit, own forces. **$475,000.** CD 6/3.

▲ **Wis., Beloit**—POWER PLANT—Fairbanks, Morse & Co., Beloit, power plant, to Stone & Webster Eng. Corp., 33 S. Clark St., Chicago, Ill., **$2,500,000.**

UNCLASSIFIED

BIDS ASKED

Ont., Point Edward—DOCK SHED—B.A. 1/30— Canadian National Railways, Union Station, Toronto, dock shed. Approx. $300,000. Plans deposit $50. E. R. Logie, Union Station, Toronto, engr.

Maryland—RAILROAD SIDING—B.A. 1/31—State Rds., Comn., 108 E. Lexington St., railroad siding in Salisbury, beginning at Penna. R.R. track near Boundary Ave. and exten. into State Rds. Comn. property on West St. Contr. Wi-231-8-115, Wicomico Co. Plans deposit $5.

† **N. Y., Brooklyn**—MACHINE FOUNDATIONS—B.A. 1/31—Construction Officer, New York Naval Shipyard, Naval Base, Zone 1, two machine fdns. and associated work in Bldg. 128. Spec. 23655. Plans deposit $10.

Md., Baltimore—RECREATION CENTER—B. A. 2/1—City, Bd. Parks & Recreation, Druid Hill Park, 2 story, brick, concrete, concrete block, steel, Curtis Bay Recreation Center, Curtis Ave. and Filbert St. **$125,000.** Plans deposit $25. R. E. L. Williams, 410 Municipal Bldg., bldg. constr. engr. CD 12/4/47.

Ont., Port Burwell—PIER—B.A. 2/1—Acting Secy. Dpt. P. Wks., Hunter Bldg., Ottawa, reconstr. pier. Approx. $150,000. Plans deposit $20. R. Blais, c/o owner, engr.

N. S., North Sydney—DOCK, etc.—B.A. 2/1—R. Fortier, acting secy. Dpt. P. Wks., Hunter Bldg., Ottawa, Ont., enlarging dock and terminal facilities, Canadian Government Railways. Approx. $150,000. Plans deposit $50. R. Blais, c/o owner, engr. CD 3/18.

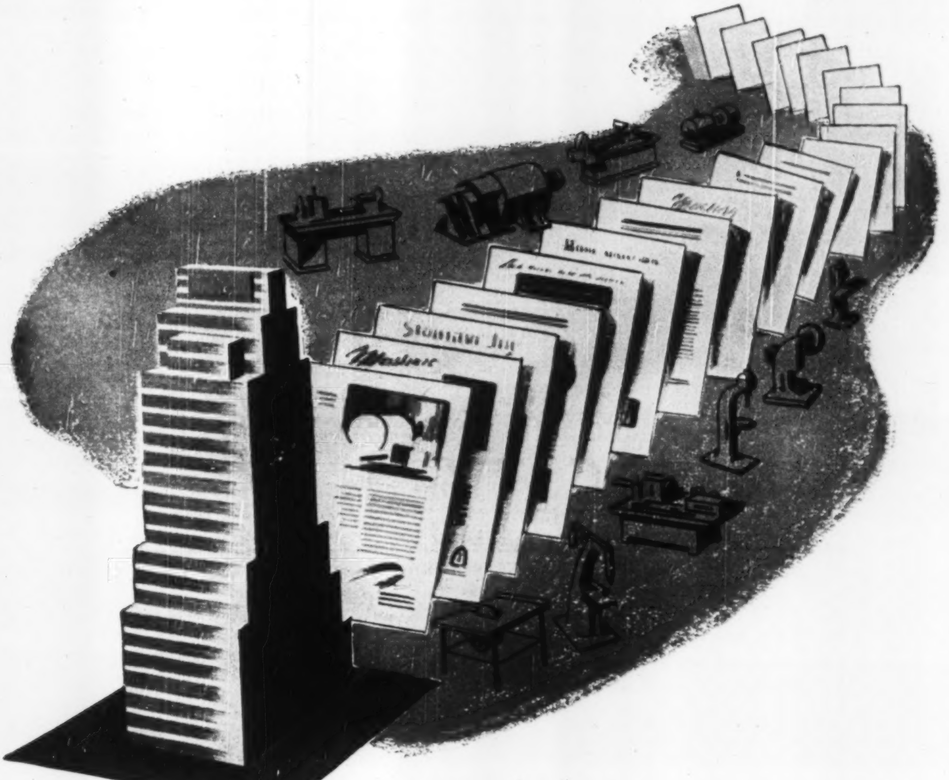
† **Arizona-Nevada** — HANDRAILINGS — B.A. 2/2—Bureau Reclamation, Dpt. Interior, Bldg. 1-A, Denver Federal Center, Denver, Colo., furnishing, del. f.o.b. cars shipping point or f.o.b. cars Kingman (Louise) Ariz., steel handrailings incl. housing for handrailing lighting units, for Davis Power Plant, Davis Dam Proj., Spec. 2894. L. N. McClellan, ch. engr.

Ia., Des Moines—PARKING BLDG.—B.A. 2/2—City, parking bldg., incl. elevators, 4 and Locust Sts. $500,000, Nemmers, Clark & Spooner, 207 Masonic Temple Bldg., archts. CD 7/3147.

† **N.M., Las Cruces**—CHAIN LINK FENCE—B.A. 2/2—U. S. Eng., P. O. Box 1538, Albuquerque, chain link security fence, U. S. Naval Unit, White Sands Proving Ground, NAV-912, Serial No. Eng-29-005-50-29. CD 1/10.

N. Y., Brooklyn—D. C. CONNECTIONS—B.A. 2/3—Bd. Transportation, 250 Hudson St., New York, Zone 13, furnishing, installing D. C. connections and associated work for the Livonia, Nostrand and 239 St.

(Continued on page 78)



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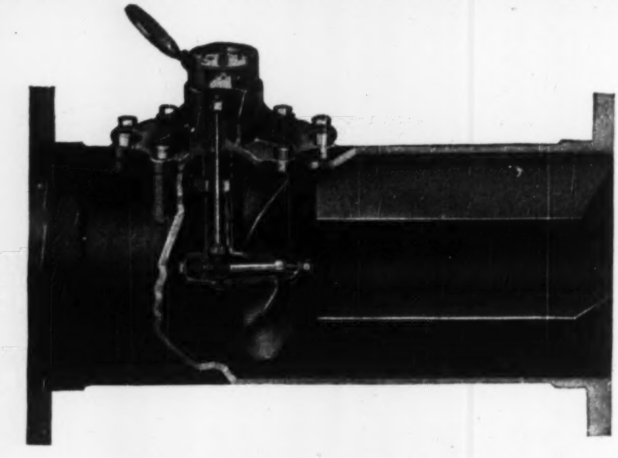

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(Continued from page 76)

Substations, IRT Div. and Sheepshead Substation, BMT Div. Brooklyn and Bronx.

† **Tex., Camp Hood (Ind. Br. Killeen)**—TRAINING FACILITIES—B. A. About 2/7—U. S. Eng., 606 Santa Fe Bldg., Galveston, augmentation of training facilities, Texas National Guard, North Camp Hood, Inv. No. ENG-41-243-50-7. Plans deposit $10.

Calif., Los Angeles—LIGHTING SYSTEM—B.A. 2/8—City Council, electrolier lighting sys. in Soto St., Marengo to Seventh Sts. $50,000. Lloyd Aldrich, city engr.

Calif., Petaluma—SWIMMING POOL—B.A. 2/8—Petaluma High School Dist., Fair St., swimming pool. Approx. $50,000. Plans deposit $50. Robert Stanton, Box 2177, Carmel, archt.

SOON LETS CONTRACT

La., Baton Rouge—BASEBALL PARK—Baton Rouge Baseball Club, c/o Manson-McCain, Inc., archt., 8200 Florida St., soon lets contract baseball park.

LOW BIDDERS

Pa., Phila.—FIELD HOUSE, etc.—Bd. Educ., 21 and Winter Sts., field house, grandstand and athletic field, 48 St. and Elmwood Ave., from Wolfe Constr. Co., 17 and Thompson Sts. **$168,168.** CD 2/8/45.

CONTRACTS AWARDED

† **Montana**—TURBINES—Bureau Reclamation, Dpt. Interior, Bldg. 1 A, Denver Federal Center, Denver, Colo., furnishing, del. f.o.b. cars shipping point or f.o.b. cars Louisville, three 23,500 hp. hydraulic turbines for Canyon Ferry Power Plant, Canyon Ferry Unit, Missouri River Basin Proj., Spec. 2814, to Newport News Shipbuilding & Dry Dock Co., Newport News, Va., **$522,600.** Bids 12/13, awarded 1/10. CD 12/22, under LB.

O., Burton—GRANDSTAND—Geauga County Fair Bd., c/o Bd. Comrs. Geauga Co., Courthouse, block, steel grand stand, to Alger Rau, Inc., 17024 Miles Ave., Cleveland. **$58,230.** Est. $75,000. Bids 12/31, awarded 1/3. CD 12/7.

▲† **Oregon and Washington**—RAILROAD RELOCATION—U. S. Eng., 19 E. Poplar St., Walla Walla, Wash., constr. 11.4 mi. sect. Union Pacific Ry. relocation and 10 mi. sect. U. S. Hys. 730 and 395 from point east of Umatilla, Ore. to Wallula Wash., CIVENG-45-164-50-46, to Utah Constr. Co., 1 Montgomery St., San Francisco, Calif., **$3,070,709.** Bids 12/20. CD 12/22, under LB.

▲† **Oregon**—RAILROAD RELOCATION—U. S. Eng., Pittock Block, Portland, Zone 5, construct section Southern Pacific R.R. relocation and section Oregon State Hy. 58 relocation near Meridian (Lookout Point) dam site, CIVENG-35-026-153, Lane Co., to Leonard & Slate and E. C. Hall, 7805 S. W. 40 St., Portland, **$2,064,758.** Est. $2,288,325. Bids 12/22, awarded 1/10. CD 12/28, under LB.

S. C., Charleston—TERMINALS, etc.—South Carolina State Ports Auth., 1 Vendue Range, repairing terminals, piers etc. own forces. **$140,000.** CD 1/13.

Tenn., Knoxville—YARD IMPRVS.—Southern Railway System, R. E. Logan, ch. engr. Maintenance and Ways and Structural (Central Lines), 101 N. Gay St., removal 750,000 cu. yd. earth at John Sevier Yards to Wright Contg. Co., 504 25 Ave., Columbus, Ga., **$340,000.** CD 12/8.

▲ **Texas**—GAS LINE—United Gas Pipe Line Co., Alamo Natl. Bldg., 19 mi. 16 in. loop gas line partially around San Antonio, from municipal airport to Bandera Hy. to South San Antonio, to Brown & Root, Inc., Box 3, Houston. **$1,600,000.** A. B. Greene, 1525 Fairfield St., Shreveport, La., ch. engr. CD 5/9/47.

Texas—RURAL DISTRIBUTION LINES—Wise Electric Co-operative, Decatur, 239 mi. rural distr. lines, Wise Co., to Irby Constr. Co., 815 S. State St., Jackson, Miss. **$204,341.** Est. $210,000. Bids 12/22. CD 12/15.

Tex., San Antonio—LIGHTING SYSTEM—City Pub. Service Bd., 201 N. St. Marys St., Unit 7, addnl. street lighting sys., force account. Approx. $150,000.

Proposal Advertisements see pp. 79 to 82

KERRIGAN Weldforged STEEL GRATING AND STAIR TREADS

Continuous spiral cross bars, alternating right and left, provide safer footing, greater strength, lower maintenance, maximum light and ventilation.

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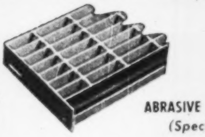
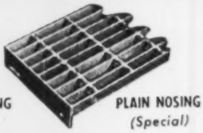
(Standard)



ABRASIVE NOSING
(Special)



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(Special)

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OFFICIAL PROPOSALS

RATE: THE RATE FOR OFFICIAL PROPOSAL ADVERTISING IS $1.00 PER LINE (OR FRACTION) PER INSERTION.

COPY RECEIVED UP TO 10:00 A. M. FRIDAY FOR ISSUE OUT FOLLOWING THURSDAY SUBJECT TO SPACE OPEN FOR LAST MINUTE ADS

SEND COPY TO OFFICIAL PROPOSAL DIVISION, ENGINEERING NEWS-RECORD, 330 W. 42ND ST., NEW YORK 18, N. Y.

Bids: April 11, 1950 (527)

Warragamba Dam Contract No. 2388

METROPOLITAN WATER SEWERAGE & DRAINAGE BOARD
SYDNEY, NEW SOUTH WALES

Tenders are invited for the supply of electrically driven REFRIGERATION PLANT for the production of dry ice and chilled water for concrete mixing.

The plant is to comprise 3 or more identical units having a total combined output of 340,000 lbs. of dry granulated ice and 10,000 Imperial gallons of chilled water at 34° Fahr. per 24 hours continuous operation. (Maximum initial water temperature —90° F).

The Specification and Tender documents should be obtained from The Metropolitan Water Sewage and Drainage Board, 341 Pitt Street, Sydney, N.S.W., but a copy is available for inspection at the Offices of the Australian Government Trade Commissioner, Room 426, 630 Fifth Avenue, New York City.

The closing date for receipt of tenders is 2 p.m. on 11th April, 1950 at the offices of the Metropolitan Water Sewage and Drainage Board in Sydney.

It is preferred that Tenders should include delivery to site and installation of the plant, but Tenders for manufacture and delivery F.O.B. U.S.A. port will receive consideration.

Bids: January 31, 1950 (528)

Tender for Vibratory Aggregate Feeders

METROPOLITAN WATER SEWAGE & DRAINAGE BOARD
SYDNEY, NEW SOUTH WALES

Plant Tender No. 340. Supply and delivery of thirty-eight mechanically-operated or electric vibratory aggregate feeders or power operated gates capable of discharging at set rates of flow.

Tenders addressed to the Secretary, Metropolitan Water Sewage and Drainage Board, 341 Pitt Street, Sydney, N.S.W., Australia, will be received up to 2.00 p.m. on Tuesday, January 31st, 1950.

Suppliers who are unable to tender in time should communicate with the Australian Government Trade Commissioner in New York City.

Specifications and Tender Forms may be inspected at the Office of the Australian Government Trade Commissioner, Room 426, 630 Fifth Avenue, New York City, or will be supplied on application to the office of the Metropolitan Water Sewage and Drainage Board in Sydney.

Bids: February 14, 1950 (524)

Manufacture & Delivery of Pipes & Fittings

Notice to Bidders

Sealed proposals for the manufacture and delivery of approximately 34,580 lineal feet of 48-inch, 9500 lineal feet of 36-inch and 3300 lineal feet of 24-inch pipe and fittings for additional water supply will be received by the City Purchasing Agent at his office, Room 36, City Hall, No. 20 South Fitzhugh Street, Rochester, N. Y., until 11:00 o'clock A.M., Eastrn Standard tme on February 14, 1950, at which place and time they will be publicly opened and read aloud.

Contractors Watch This Section —

for new projects. Publish your announcements through the proposal sections of *Engineering News-Record* and get their bids.

Bids will be accepted on Reinforced concrete steel cylinder type pipe, Prestressed Reinforced concrete steel cylinder type pipe and Electric Fusion Welded steel water pipe with cement mortar lining.

Plan, Bidding sheets, Specifications and Contract may be examined at the office of the Purchasing Agent, and copies obtained upon payment of $25.00 per set, which money will be refunded, providing the plans are returned in good condition within ten days after date of opening.

All bids shall be made on the form provided in the contract documents and shall be accompanied by a certified check for an amount equal to five per cent (5%) of the total amount of the bid, payable to the City of Rochester, N. Y., as a guarantee that the bidder will execute the contract within 10 days after being notified that his bid has been accepted.

No proposal will be accepted by the City unless the Bidder shall have filed with the Purchasing Agent, at least seven days prior to the date set for opening of bids a certified statement showing financial responsibility, experience, plant and equipment on a form supplied by the City Comptroller and available at the office of the Purchasing Agent.

The Purchasing Agent reserves the right to reject any or all bids.

FRED W. ERETH
Purchasing Agent

Dated: Jan. 26, 1950.

Bids: February 20, 1950 (529)

Construction of a House Sewer

CORPORATION NOTICE
CITY OF YONKERS

PROPOSALS FOR THE CONSTRUCTION OF A HOUSE SEWER IN SUNNYBROOK —SECTION ONE BETWEEN PALMER ROAD AND CENTRAL PARK AVENUE.

Office of the
Board of Contract and Supply
Yonkers, New York January 20th, 1950.

Pursuant to Special Ordinance No. 5, 1949, sealed proposals will be received at the Office of the Secretary of the Board of Contract and Supply, Room No. 316, City Hall, Yonkers, New York, until 2:00 o'clock P. M., (EASTERN STANDARD TIME) Monday, February 20th, 1950.

Copies of Information for Bidders, Form of Proposals, Form of Contract, including Specifications for the aforesaid Sewer may be obtained at the Office of the Board of Contract and Supply, and only bids made upon said forms will be accepted. Copies may be obtained upon deposit of $10.00 (CASH OR CERTIFIED CHECK) which will be refunded to each bidder who bids, or returns the Specifications unused, within Ten (10) days after the opening of Bids.

Dated: January 20th, 1950.

FRANK VAN BLARCOM
Secretary of the Board of
Contract and Supply

U. S. Government

NORTH PLATTE PROJECT, Design Section, Casper, Wyoming. January 10, 1950. UNITED STATES DEPARTMENT OF THE INTERIOR, BUREAU OF RECLAMATION. NOTICE IS HEREBY GIVEN that sealed bids on Specifications No. VII-104 will be received at Casper, Wyoming, until 10 a.m., Mountain Standard Time, February 9, 1950, and then publicly opened for repairing a timber bridge across the North Platte River at Whalen, Wyoming, North Platte Project, Nebraska-Wyoming.

Copies of the standard forms and of the specifications may be obtained from the following offices of the Bureau of Reclamation: A. A. Batson, Regional Director, New Customhouse, Denver, Colorado, and I. J. Matthews, District Manager, Casper, Wyoming. No charge to prospective bidders for copies of the specifications and drawings; to others $0.25 per copy, not returnable. (520)

U. S. Government

UNITED STATES DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. 2893) will be received by Bureau of Reclamation, Friant, California, February 14, 1950, and then publicly opened for furnishing labor and materials and performing all work for the construction of earthwork, pipe lines, and structures, laterals 124.5W, 126.7W, 128.3W, and 129.8W, unit 2, S.S.J.M.U.D., Friant-Kern Canal Distribution System, Central Valley Project, California. The work is situated near Delano, California. Principal items are approximately: 375,000 cu. yds. of excavation for pipe trenches; furnishing and laying 80 mi. of concrete pipe lines with pipe diameters varying from 10 to 60 in., inclusive; 1,000 cu. yds. of concrete in structures; and other work. The work is divided into 3 schedules. Time allowed for completion will be 550 days. For particulars, address Bureau of Reclamation, Friant, California; or Building 1-A, Denver Federal Center, Denver, Colorado.

MICHAEL W. STRAUS, Commissioner. (521)

UNITED STATES DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. 2895) will be received by Bureau of Reclamation, Superior, Nebraska, February 16, 1950, and then publicly opened for furnishing labor and materials and performing all work for the construction of earthwork and structures for Superior Canal, station 1083+00, to end station 1628+09, and drains, channel changes, and terminal wasteway, Superior-Courtland Unit, Bostwick Division, Nebraska-Kansas, Missouri River Basin Project. The work is situated near Superior, Nebraska. Principal items are approximately: excavation, 145,000 cu. yds.; concrete, 1,000 cu. yds.; furnishing and laying concrete pipe, 4,700 lin. ft.; furnishing and installing gates, gate hoists, and miscellaneous metalwork, 22,400 lbs.; and other work. The work is divided into 2 schedules. Time allowed for completion will be 300 days. For particulars, address Bureau of Reclamation, Superior, Nebraska; or Building 1-A, Denver Federal Center, Denver, Colorado.

MICHAEL W. STRAUS, Commissioner. (530)

Additional OFFICIAL PROPOSAL Advertisements on pages 80, 81, and 82

OFFICIAL PROPOSALS

(Continued from page 79)

Bids: February 8, 1950 (526)

State Road Work

Sealed proposals will be received by the State Highway Department at its offices, Dover, Delaware, until 2:00 P.M., E.S.T., February 8, 1950, and at that time and place publicly opened for contracts involving the following approximate quantities:

CONTRACT 1001
Federal Aid Project S-103 (1)
Laurel to Mission
Sussex County
C. C. Widening & Hot Mix Asphalt Resurface 12.172 Mi.

6	A. Clearing
6	A. Grubbing
29,500	C. Y. Excavation
450	C. Y. Structure Excavation
700	C. Y. Borrow Pit Stripping
15,500	C. Y. Selected Borrow
8,150	C. Y. Cement Concrete Base
26,000	T. Hot Mix Asphalt Surface
6,000	S. Y. Patching
270	C. Y. Cement Concrete Masonry
22,000	Lb. Reinforcing Steel
25,000	Lb. Structural Steel
70	L. F. Steel Handrail
2,530	L. F. 12" R. C. Pipe
1,415	L. F. 15" R. C. Pipe
520	L. F. 18" R. C. Pipe
230	L. F. 24" R. C. Pipe
60	L. F. 30" R. C. Pipe
45	L. F. 36" R. C. Pipe
240	L. F. 8" Corr. Metal Pipe
24	L. F. 12" Vit. Clay Pipe
350	L. F. Timber Piles
60	L. F. Timber Test Piles
11	M. Ft. Sheet Piles
200	S. Y. Cement Concrete Gutter
470	L. F. Cement Concrete Curb
130	L. F. Cement Concrete Parkway Curb
1,100	S. F. 4" Cement Concrete Sidewalk
1,000	S. F. 6" Cement Concrete Sidewalk
1,750	L. F. Wood Shoulder Curb
11	Ea. Catch Basins
1	Ea. Adjusted Catch Basin
5,500	Lb. Castings
1,750	L. F. Wire Rope Guard Fence
20	Ea. End Post Attachments
20	S. Y. Top Soil
0.01	A Seeding
18,000	S. Y. Sodding
3,300	Gal. R. C. 1 Asphalt
3,300	Gal. R. C. 3 Asphalt
37	T. Slag Chips
37	T. Crushed Chips
900	T. Sand
270	S. Y. Removal Present Pavement
14,500	L. F. Ditching
	L. S. Removal Present Bridge

CONTRACT 1039
Federal Aid Project S-94 (1)
Farmington to Harrington
Kent County
Stabilized and Surface Treated Road 4.108 Mi.

1.5	A. Clearing
2	A. Grubbing
25,500	C. Y. Excavation
3,500	C. Y. Borrow
200	C. Y. Borrow Pit Stripping
15,000	C. Y. Selected Borrow
3,100	T. Waterbound Macadam
920	T. Hot Mix Asphaltic Surface
50	S. Y. Patching
1,150	L. F. 12" R. C. Pipe
6	L. F. 24" R. C. Pipe
6,200	L. F. Cement Concrete Curb
148	L. F. Cement Concrete Inlet Curb
300	S. F. 4" Cement Concrete Sidewalk
42	Ea. Catch Basins
21,000	Lb. Castings
2,100	S. Y. Top Soil
0.6	A. Seeding
22,500	Gal. R. C. 1 Asphalt
22,500	Gal. R. C. 3 Asphalt
1,100	L. F. 22"x13" C. M. Arch Pipe
4,550	L. F. 29"x18" C. M. Arch Pipe
5,400	L. F. Ditching
900	T. Slag Chips
900	T. Crushed Chips

CONTRACT 1040
Federal Aid Project F-148 (2)
Hardscrapple to Laurel
Sussex County
C. C. Widening & Hot Mix Asphalt Surface 6.116 Mi.

0.5	A. Clearing
0.5	A. Grubbing
7,500	C. Y. Excavation
130	C. Y. Structure Excavation
4,700	C. Y. Borrow
600	C. Y. Borrow Pit Stripping
8,000	C. Y. Selected Borrow
2,800	C. Y. Cement Concrete Base (Cr. Cont.)
13,500	T. Hot Mix Asphalt Surface
2,800	S. Y. Patching
65	C. Y. Cement Concrete Masonry
4,200	Lb. Reinforcing Steel
1,260	L. F. 12" R. C. Pipe
410	L. F. 15" R. C. Pipe
200	L. F. 18" R. C. Pipe
260	L. F. 24" R. C. Pipe
90	L. F. 30" R. C. Pipe
30	L. F. 36" R. C. Pipe
8,000	S. Y. Soding
1,000	Gal. R. C. 1 Asphalt
1,000	Gal. R. C. 3 Asphalt
40	T. Stone Chips
40	T. Crushed Chips
3	Ea. Adjusted Catch Basins
400	T. Sand
7,000	L. F. Ditching

Contracts 1001, 1039 and 1040 are Federal Aid Projects and will be governed by the provisions of the Federal Aid Highway Act as amended.

The Employment Agency for these contracts shall be the Delaware State Employment Service whose offices are located at 307 S. State Street, Dover, Delaware, 5 S. E. Front Street, Milford, and the Wagamon Building, The Circle, Georgetown, Delaware.

Attention is called to the Special Provisions in the proposal, specifications and contract agreement.

Performance of contract shall commence within ten (10) days after execution of the contract and be completed as specified.

Monthly payments will be made for ninety (90) per cent of the construction completed each month.

Bidders must submit proposals upon forms provided by the Department.

Each proposal must be accompanied by a surety bond, certified check, or money to the amount of at least ten (10) per centum of the total amount of the proposal.

The envelope containing the proposal must be marked "Proposal for the construction of State Highway Contract No. ......"

The right is reserved to reject any or all bids.

The contreat will be awarded or rejected within twenty (20) days from the date of opening proposals.

Complete sets of plans and specifications may be obtained after January 17, 1950, upon receipt of five dollars (5.00) for each Contract, which amount will not be refunded.

Make checks payable to the State Highway Department.

STATE HIGHWAY DEPARTMENT
By: J. Gordon Smith, Chairman.
M. Allan Wilson, Chief Engineer.
Dover, Delaware.
January 11, 1950.

Bids: February 15, 1950 (525)

State Road Work

NOTICE TO CONTRACTORS: STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.—Pursuant to the provisions of Chapter 63, Laws of 1936, as amended, and special provisions for projects financed with federal aid funds, sealed proposals will be received until ten-thirty o'clock A.M., eastern standard time on March 1, 1950 by Henry A. Cohen, Director, Bureau of Contracts & Accounts, 14th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y., for the following projects: Maps, plans, specifications and proposal forms may be seen and obtained at the office of the State Department of Public Works, Bureau of Contracts & Accounts, Albany, N. Y., and at the office of the District Engineers noted below, and may also be seen at the office of the State Department of Public Works, 270 Broadway, New York City.

The deposit for plans and proposal forms for each contract containing 1 to 15 sheets is $5.00; 16 to 30 sheets, $10.00; over 30 sheets, $20.00. A refund will be made in full to bidders for the return of one set in good condition within 30 days of award or rejection of bids; refund for all other sets in good condition, similar period, will be 50% of deposit.

County	Contract No.	Name	Miles	Type	Deposit	Estimated Cost of Work
DISTRICT No. 3 Wm. Robinson, Dist. Engr., 301 E. Water St., Syracuse, N. Y.						
Onondaga	FG C 50-3 FG RC50-2 FG RC SS50-3	Elim. of Grade Xing of the N. Y. C. R. R. with: City of Syracuse: James St.; Eastwood Village, S. H. 896; James St., S. H. 9; Thompson S. H. 429 & Thompson Road, D. A. S. S. 43-4 Proj. No. UG 1094(1)	0.95	9" Cem. Conc. Pavt. 52' & Var. Widen. = 0.40 Mi. Asp. Conc. Type 2A = 0.55 Mi. Alpha I-Beam 64' 6" Alpha $259	$50,000 Plans $10	$860,000
DISTRICT No. 4 A. R. Mulligan, Dist. Engr., Barge Canal Term., Rochester, N. Y.						
Genesee	FAC 50-4	Batavia City: Main St.; Proj. No. U706(3)	0.79	Traffic Signal System	$1,000 Plans $5	$19,000
DISTRICT No. 7 R. F. Hall, 444 VanDuzee Street, Watertown, N. Y.						
Jefferson	PSC 6591	Elim. of Grade Crossing of the N. Y. C. R. R. and West Main St.: City of Watertown	0.23	8" Cem. Conc. Pavt. 2 at 24' Wide I-Beam, 2 Span 32' Each	$26,000 Plans $20	$490,000
DISTRICT No. 8 J. S. Bixby, Dist. Engr., Pleasant Valley Rd., Poughkeepsie, N. Y.						
Rockland	FASS 50-2 RC 50-4	New Hempstead Road-Roberts Road; Coyles Corners-Short Clove, S. H. 9005 Proj. S 311(1)	2.60	Asphalt Conc. Opt.	$21,000 Plans $10	$360,000

Proposal for each contract must be submitted in a separate sealed envelope with the name and number of the contract plainly endorsed on the outside of the envelope. Each proposal must be accompanied by cash, draft or certified check payable to the order of "State of New York, Commissioner of Taxation & Finance" for the sum as specified in the advertisement and the proposal. The retention and disposal of the bidding check, the execution of the contract and bonds shall conform to the provisions of the Highway Law, as set forth in "Instructions to Bidders".

When optional types are permitted on contracts with federal funds, bidders must state in the space provided in the proposal the exact designation of the optional type upon which the proposal is predicated.

The right is reserved to reject any or all bids.

B. D. TALLAMY
Supt. of Public Works

U. S. Government

U. S. ARMY, CORPS OF ENGINEERS, NEW ENGLAND DIVISION Army Base, Boston 10, Mass. Inv. No. Eng-19-016-50-2. Sealed bids will be received at this office until 2:00 P.M., February 7, 1950, and then publicly opened for Construction of a Veterans Administration Hospital, 1000 bed General Medical, Boston, Massachusetts, in accordance with specifications and plans, copies of which are available at this office. Deposit required of $100.00 per set for blueprints, which will be issued to General Contractors only, $35.00 for half-size reproductions, and $25.00 for specifications, in form of certified check or postal money order payable to "Treasurer of the United States". (481)

(Continued on page 81)

"Opportunity" Advertising:
Think
"SEARCHLIGHT"
First

OFFICIAL PROPOSALS

(Continued from page 80)

Bids: February 8, 1950 (517)

Construction of Airport

STATE OF RHODE ISLAND AND
PROVIDENCE PLANTATIONS
DEPARTMENT OF FINANCE
DIVISION OF PURCHASES
NOTICE TO AIRPORT CONTRACTORS

Sealed proposals addressed to the Division of Purchases, for the construction of the following project, will be received by the Division of Purchases at the office of the State Purchasing Agent, Room 123, State House, Smith Street, Providence, R. I., until 10:00 A.M. (E.S.T.) on the 8th day of February, 1950, at which time they will be opened and read in public.

Project No. 9120-42 North Central, County of Providence, Towns of Smithfield-Lincoln, North Central State Airport. Construction of airport: paved runway; apron and taxiway; drainage; lighting; administration, hangar and utility buildings.

Bids for the above work must be made on blanks furnished by the Department of Public Works, Division of Roads and Bridges. Plans and specifications and Special Provisions may be examined at Room 123, State House, or Room 224 State Office Building, Providence, R. I., on and after Wednesday, January 11, 1950, every week-day except Saturdays and holidays, between the hours of 8:30 A.M. and 4:30 P.M. Blanks for submitting proposals may be obtained through the Office of the State Purchasing Agent at the address above stated. A deposit of $50.00 for Contract Documents shall be made, which will be refunded if plans and specifications are returned in good condition fourteen (14) days after bids are received.

A certified check or bid bond payable to the State of Rhode Island, or cash, in the amount of $30,000.00 must be furnished by each bidder.

This Proposal Guaranty will be returned after the contract has been executed. A performance bond of one hundred (100) per cent of the contract price with a satisfactory surety company will be required of the successful bidder. The Division of Purchases reserves the right to reject any or all bids.

EMPLOYMENT LISTS.—A local employment service has been designated by the R. I. Employment Service to prepare the employment lists for the project. Requests for men to be employed on the project shall be submitted to the District Office at 63 High Street, Pawtucket, and 112 Union Street, Providence, R. I.

WAGES OF LABOR.—In conformity with the provisions of Chapters 290 and 291, General Laws, 1938, the minimum wages for a day's work paid craftsmen, teamsters and laborers shall not be less than the customary and prevailing rate of wages for a day's work in the same trade or occupation in the locality where the work is undertaken. Such a schedule of wages has been established on a minimum hourly basis and is on file in the office of the State Department of Labor. The Contractor shall pay not less than these minimum wage rates.

The attention of bidders is invited to the fact that the R. I. Department of Public Works, Division of Aeronautics and Division of Roads and Bridges, has been advised by the Wage and Hour Division, U. S. Department of Labor, that contractors engaged in highway construction work are required to meet the provisions of the Fair Labor Standards Act of 1938 (52 Stat. 1060).

SUBLETTING OR ASSIGNING THE CONTRACT.—The attention of bidders is directed to the Standard and/or Special Provisions covering subletting or assigning the Contract.

DEPARTMENT OF FINANCE,
DIVISION OF PURCHASES
By: Franklyn A. Adams,
State Purchasing Agent.

Bids: March 13, 1950 (502)

Improvements to Pumping Station

CITY OF EAST ORANGE, NEW JERSEY

Sealed bids will be received by the Board of Water Commissioners of The City of East Orange, New Jersey, until 8 o'clock, P.M., March 13, 1950, at the office of the Board of Water Commissioners, City Hall, East Orange, New Jersey, for furnishing materials and performing the labor for mechanical improvements to the White Oak Ridge Pumping Station.

Copies of the Plans and Specifications may be obtained at the office of the Board of Water Commissioners or at the office of Buck, Seifert and Jost, Consulting Engineers, 112 East 19th Street, New York 3, N. Y., upon deposit of Twenty-five ($25.00) Dollars, which sum will be refunded, upon return of the plans and specifications in good condition within ten (10) days after the date on which bids are received.

The work to be performed is divided into four (4) sections. The principal items of work are:

SECTION A: PUMPING EQUIPMENT AND STRUCTURES, furnishing and installing two (2) electric motor driven centrifugal pumping units, two (2) gasoline engine driven centrifugal pumping units and one (1) gasoline engine driven generator unit together with all piping, valves, gauges and alterations to existing piping and equipment; removing existing steam pumping equipment, piping and appurtenances and constructing alterations to the existing pumping station.

SECTION B: ELECTRICAL EQUIPMENT AND WIRING, furnishing and installing transformer sub-station, switchboard, starting and control equipment and power, control and light wiring and appurtenances.

SECTION C: HEATING, furnishing and installing a two (2) zone oil-fired circulating hot water heating system complete with boiler, piping and appurtenances.

SECTION D: PLUMBING, furnishing and installing plumbing fixtures, piping and accessories.

Each proposal must be accompanied by a certified check or bid bond equal to fifteen (15%) per cent of the proposal. The certified check will be retained to pay for any damage or loss to the Commissioners, or the liability bond will accrue in case the successful bidder shall neglect or refuse to enter into a contract in accordance with his proposal.

The Commissioners reserve the right to consider bids for thirty (30) days after their receipt before awarding any contract and the right is reserved to accept any bid or to reject any or all of them.

BOARD OF WATER COMMISSIONERS
CITY OF EAST ORANGE, NEW JERSEY
MAJOR TALI E. WATERS, President
EARLE R. MATH, Vice President
ALBERT C. WEIGEL, Commissioner
ROSWELL M. ROPER, Engineer, General Manager and Secretary
BUCK, SEIFERT AND JOST
CONSULTING ENGINEERS

Bids: February 7, 1950 (523)

Construction of Substructure

PENNSYLVANIA TURNPIKE
COMMISSION
Harrisburgh, Pennsylvania
NOTICE TO BIDDERS

Sealed proposals will be received by the Pennsylvania Turnpike Commission, through the Chairman, 11 North Fourth Street, Harrisburg, Pennsylvania, until 10.00 A.M. (Eastern Standard Time), the 7th day of February 1950, and immediately thereafter will be taken to the Public Utility Commission's Hearing Room No. 1, North Office Building, State Capitol, Harrisburg, Pennsylvania, and immediately publicly opened and read aloud, for the following contract:

For the construction of substructure, Turnpike Section 29CD, Beaver River Bridge, part of the Western Pennsylvania Turnpike Extension, in Big Beaver and North Sewickley Townships, Beaver County, and approximately one-half (½) mile East of Homewood Borough in Big Beaver Township, Beaver County, Commonwealth of Pennsylvania. This section being situated as follows:

Beginning at a point approximately 284 feet West of the Centerline of the West track of the Pittsburgh and Lake Erie Railroad at Turnpike Station 266+15.50 in Big Beaver Township, Beaver County, thence in an Easterly direction 1,545 feet to a point approximately 478 feet East of the Centerline of the East track of the Pennsylvania Railroad at Turnpike Station 281+60.50 in North Sewickley Township, Beaver County, a distance of approximately 0.293 miles.

The approximate quantities of the principal items are as follows:

Class 1 Excavation, 1,079 cubic yards; Class 2 Excavation, 2,943 cubic yards; Clas 2A Excavation, 3,441 cubic yards; Borrow Excavation, 12,875 cubic yards; Class A Concrete, 2,276 cubic yards; Class A Concrete Seal, 1,024 cubic yards; Class B Concrete, 5,635 cubic yards; Steel Reinforcing Bars, 319,400 pounds; Fabricated Structural Steel, 6,400 pounds.

In general, the principal parts of the work include:

(a) Land and River Pier and Abutment Excavation, (b) Construction of concrete substructures.

Copies of plans, specifications, an dother contract documents are on file and open to public inspection at the offices of the Pennsylvania Turnpike Commission located at Harrisburg, Pennsylvania on 23 January 1950. Plans, specifications and other contract documents will not be available before this date for inspection or for mailing to prospective bidders. Copies of specifications for grading, drainage, paving and structures may be purchased from the Pennsylvania Turnpike Commission for the sum of five ($5.00) dollars per copy.

Plans and contract documents, exclusive of specifications may be obtained from the Commission upon deposit of Ten ($10.00) for each set, such deposits to be refunded in full to any actual bidder upon return of such documents in good condition within five (5) days after the date of the opening of the bids. Refund will be made for all plans and contract documents if the project is withdrawn from letting by the Pennsylvania Turnpike Commission. Remittances are payable to the Pennsylvania Turnpike Commission and must accompany requests for drawings, specifications and contract documents.

The character and amount of bid security to be furnished by bidder is stated in the Instructions to Bidders.

No bids may be withdrawn for thirty (30) days after the scheduled closing time for receipt of bids.

PENNSYLVANIA TURNPIKE
COMMISSION
James F. Torrance
Secretary and Treasurer
Harrisburg, Pennsylvania
17 January 1950

U. S. Government

Kendrick Project, Design Section, Casper, Wyoming. January 9, 1950, Specifications VII-99. NOTICE IS HEREBY GIVEN that sealed bids on Specifications No. VII-99 will be received at Casper, Wyoming, until 10 a.m., Mountain Standard Time, February 14, 1950, and then publicly opened for furnishing and delivering one control board panel and the unmounted equipment for the Cheyenne Substation, Kendrick Project, Wyoming.

Copies of the standard forms and of the specifications may be obtained from the following offices of the Bureau of Reclamation: A. A. Batson, Regional Director, New Customhouse, Denver, Colorado, and I. J. Matthews, District Manager, Casper, Wyoming. No charge to prospective bidders for copies of the specifications and drawings; to others $0.25 per copy, not returnable. (519)

(Continued on page 82)

Official Proposals Columns
of
ENGINEERING
NEWS-RECORD
are MUST reading, each week, for contractors, engineering-construction companies, equipment and materials manufacturers, all over the United States.
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Official Proposal Division
ENGINEERING NEWS-RECORD
Address: New York 18, N. Y.

OFFICIAL PROPOSALS

(Continued from page 81)

(518)

New Jersey Turnpike Authority

Sealed proposals will be received by the New Jersey Turnpike Authority for the following projects:

CONTRACTS NOS. 3, 3A, and 3B

The work to be performed under these Contracts involves grading, drainage structures, and incidental work in connection with the construction of the New Jersey Turnpike, Section 1, between Deepwater and Woodbury, in Salem and Gloucester Counties, New Jersey.

Principal items of work for Contract Nos. 3A and 3B include:

	Contract No. 3A	Contract No. 3B
Clearing and grubbing	80 acres	63 acres
Excavation and grading	1,882,850 cu. yds.	2,002,900 cu. yds.
Compaction of in-place material	429,000 cu. yds.	420,000 cu. yds.
Topsoiling	381,000 sq. yds.	384,000 sq. yds.
Gravel surface course	3,900 cu. yds.	4,700 cu. yds.
Calcium chloride	40 tons	70 tons
Concrete	790 cu. yds.	1,835 cu. yds.
Reinforcement steel	104,000 lbs.	245,000 lbs.
Reinforced concrete pipe, various sizes	4,450 lin. ft.	7,800 lin. ft.
Corrugated metal pipe, various sizes	560 lin. ft.	950 lin. ft.
Vertical sand drains	42,000 lin. ft.	20,000 lin. ft.

Principal items of work for Contract No. 3 equal the sum of the quantities listed for Contracts Nos. 3A and 3B.

Contract documents may be seen, and may be inspected by prospective bidders during office hours, after January 16, 1950 at the office of the New Jersey Turnpike Authority, 65 Prospect Street, Trenton, New Jersey and at the office of the Engineers, J. E. Greiner Company, 1201 St. Paul Street, Baltimore, Maryland.

Plans showing grading cross-sections (417 sheets) may be examined in the office of the Authority or at the office of the Engineers, including the field office at the Old Ford Hotel, Swedesboro, New Jersey.

• • •

CONTRACT NO. 4

The work to be performed under this Contract involves construction of four concrete piers and two abutments, together with necessary excavation, cofferdams, fender system and other incidental work included in the substructure for the Turnpike bridge over the Raritan River in Middlesex County.

Principal items of work include:

Open foundation excavation	3,300 cu. yds.
Concrete, underwater	1,000 cu. yds.
Concrete, in the dry	3,500 cu. yds.
Cofferdam work	
Steel bearing piles	542,000 lbs.
Reinforcement steel	150,000 lbs.
Granite masonry	2,100 cu. ft.

Contract documents may be seen, and may be inspected by prospective bidders during office hours, after January 16, 1950, at the office of the New Jersey Turnpike Authority, 65 Prospect Street, Trenton, New Jersey, and at the offices of the Engineers, Fay, Spofford & Thorndike, 11 Beacon Street, Boston, Massachusetts and 25 Livingston Avenue, New Brunswick, New Jersey.

• • •

Proposals will be received at the office of the New Jersey Turnpike Authority, 65 Prospect Street, Trenton 8, New Jersey, until 10:30 o'clock on the morning of February 7, 1950, and thereafter in the Veteran's Room of the War Memorial Building, Memorial Drive at Willow Street, Trenton, New Jersey, until 11:00 a.m. on the same date, at which latter time and place said proposals will be publicly opened and read.

The receipt and opening of proposals is subject to proper prequalification of the bidder in accordance with the regulations adopted by the New Jersey Turnpike Authority. Bidders must also submit with their proposal a revised financial statement and a statement of plan and equipment.

Contract documents will be furnished on a deposit of $15.00 for each set upon application to the New Jersey Turnpike Authority, 65 Prospect Street, Trenton 8, New Jersey, and such deposits will be refunded upon return of the contract documents in a good condition within 10 days after the opening of the proposals.

Proposals must be made upon the standard proposal forms in the manner designated in the Standard Specifications for Construction of the New Jersey Turnpike and must be enclosed in sealed special addressed envelopes bearing the name and address of the bidder and the number of the Contract on the outside, and must be accompanied by *a certified check* drawn to the order of the New Jersey Turnpike Authority *and a proposal bond, each for not less than five (5) per cent of the amount of the proposal,* but not less than $500.00 nor more than $200,000.00 and must be delivered with proposal on or before the hour named. Copies of the proposal form to be used for submitting proposals, of the form for proposal bond, of the form to be used for financial statement and plant and equipment statement to be submitted with proposal, and special addressed envelope are furnished in detached form with the Contract Documents.

Contracts will be awarded or proposals rejected within thirty (30) days from the date of opening proposals. The right is reserved to reject any or all proposals.

NEW JERSEY TURNPIKE AUTHORITY
Paul L. Troast
Chairman

U. S. Government

CORPS OF ENGINEERS, BALTIMORE DISTRICT, BALTIMORE, MD. — Sealed bids will be received here until 11:00 a.m., E.S.T, 15 February 1950, and then opened for furnishing plant, labor and materials for the Construction of Williamsport Flood Protection Project—Levee Unit 6C, Williamsport, Lycoming County, Pennsylvania. Plans may be obtained by a deposit of $30.00 per set in the form of cash, CERTIFIED CHECK or postal money order payable to The Treasurer of the United States and mailed to the District Engineer, Baltimore District, Corps of Engineers, 24th Street and Maryland Avenue, P. O. Box 1715, Baltimore 3, Maryland. (515)

SEARCHLIGHT SECTION

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(Not available for equipment advertising)

$1.20 a Line, minimum 4 lines. To figure advance payment count 5 average words as a line.

INDIVIDUAL EMPLOYMENT WANTED undisplayed advertising rate is one-half of above rate, payable in advance.

Box Numbers in care of our New York, Chicago and San Francisco Offices count as one additional line.

Replies are forwarded each day as received at each of the offices mentioned without additional charge.

Discount of 10% is allowed if full payment is made in advance for 4 consecutive insertions.

DISPLAYED RATE

The advertising rate is $11.50 per inch for all advertising appearing on other than a contract basis. Contract rate quoted on request.

An advertising inch is measured ⅞ inch vertically on one col., 3 col.—30 inches to a page. E.N.R.

New advertisements received by January 30th will appear in the February 9th issue.

REPLIES (Box No.): Address to office nearest you
NEW YORK: 330 W. 42nd St. (18)
CHICAGO: 520 N. Michigan Ave. (11)
SAN FRANCISCO: 68 Post St. (4)

POSITIONS VACANT

STRUCTURAL CHECKER-detailer. All type structures. State qualifications, availability. Location East. P-1818, Engineering News-Record.

CONTRACTOR'S ENGINEER — Estimator. Thoroughly experienced in office and field in heavy construction work. Eastern area. Write full qualifications and salary experience. P-1934, Engineering News-Record.

WANTED—Two experienced Sewer Construction Foreman and Superintendent for Concrete Pipe and Rock Tunnel—Inquire United Foundation Corporation, 680 Lexington Rd., Union, N. J., or phone Unionville 2-4257.

PAVING SUPT. Able take charge entire operation concrete. Location: New York State. Write experience, salary required. P-1862, Engineering News-Record.

WANTED—YOUNG Engineer with some experience in estimating for building contractors. Give references and state salary required. Location West Virginia. P-1928, Engineering News-Record.

CONSTRUCTION SUPT. with proven record to handle multi-unit housing and dormitories, including trades. Must be qualified to organize and handle projects in $1,000,000.00 class. In reply give full qualifications, references, salary expected and availability. P-1924, Engineering News-Record.

STRUCTURAL STEEL Detailer for buildings, at least two years experience. Civil graduate preferred. Top Salary. Full information, work samples and snap shot required. Soule Steel & Iron Co., Charlotte, N. C.

POSITIONS VACANT

WANTED, SEVERAL engineering graduates, under 35, by large industrial fire prevention organization maintained by national insurance group, for field work involving periodic inspections and special consulting service. Permanent. P-1994, Engineering News-Record.

CARPENTER FOREMAN—Superintendent for reinforced concrete bldg. construction. Write experience and salary expected. P-2060, Engineering News-Record.

ESTIMATOR—EXPERIENCED in industrial, commercial, and institutional buildings, also heavy construction and concrete work. To take full charge of estimating in general contractor's office. Must furnish references. Permanent position. Give experience, education, age, and salary, requirements for interview. Location central New Jersey. P-2059, Engineering News-Record.

ESTIMATOR FOR General Contractor located in Ohio. State experience in taking off quantities, age, education and salary expected. P-2055, Engineering News-Record.

ESTIMATOR EXPERIENCED in preparing estimates for structural steel fabricator. Excellent opportunity with one of largest steel fabricators in Southwest. State age, experience and salary requirements. P-2076, Engineering News-Record.

CHIEF ESTIMATOR capable of taking charge of estimating department for general contractor in Northwestern Ohio. In replying give full qualifications, experience and salary wanted. Address P-2033, Engineering News-Record.

CONTRACTING FIRM operating throughout southwestern United States has attractive offer open for general manager. Experience in highway and general construction required. Applicants mail experience record, personal history and salary requirements to P-2084, Engineering News-Record.

(Continued on opposite page)

CONSTRUCTION SUPT.

TECHNICAL SCHOOL OR ENG GRAD
Wanted By Large Company

Must be expd in building & equipment installation. Chemical plant expce preferred. Man must be free to travel in U.S. Give age, education, detailed experience, and salary expected.

Write Box ER998, Equity, 221 W. 41 St. N. Y.

MECHANICAL DETAIL ASSIST.

Expanding construction firm located in Northern Ohio specializing in Water and Sewage Treatment Plants has opening for mechanical detail assistant. State age, experience, references, salary expected and include photograph if possible.

P-2070, Engineering News-Record
520 N. Michigan Ave., Chicago 11, Ill.

WANTED
BRIDGE DESIGNERS,
DESIGNER DRAFTSMEN, RESIDENT
HIGHWAY ENGINEERS, SOILS ENGINEER

Experienced men wanted. State qualifications, age, salary and date available in first letter. Construction period, 24 months. Location, Eastern or Western Pennsylvania.

P-1617, Engineering News-Record
330 West 42nd St., New York 18, N. Y.

SUPERINTENDENT/MANAGER

Expanding construction firm located in Northern Ohio specializing in Water and Sewage Treatment Plants has opening for A-1 project superintendent or manager. Give age, experience, references, and salary expected. Also include photograph if possible.

P-2069, Engineering News-Record
520 N. Michigan Ave., Chicago 11, Ill.

WANTED—SALES ENGINEER

For established firm in the Pittsburgh district making materials used widely in bridge construction and industrial plants. Must be experienced and preferably have civil engineering education.

P-1881, Engineering News-Record
330 W. 42nd St., New York 18, N. Y.

ASSISTANT MANAGER OF CONSTRUCTION

Graduate engineer, wanted by national organization. Must be experienced in all phases of chemical plant engineering and construction, who has no objection to traveling. Give age, education, detailed experience, and salary expected.

Write Box ER985, Equity, 221, W 41 St. NY 18

(Continued from opposite page)

POSITIONS WANTED

CHIEF ESTIMATOR for General Contractor Available. Experienced all types General Construction. Current volume $60,000,000 per annum. Base salary $12,000 per year. Excellent references. PW-1813, Engineering News-Record.

CONSTRUCTION SUPERINTENDENT, 18 years experience, heavy grading projects, earthen dams, airports, flood control. Can completely manage business in this field PW-1875, Engineering News-Record.

CONSTRUCTION SUPERINTENDENT or Project Manager. Over 15 years experience; Industrial, Commercial, and Governmental work. Guarantee satisfactory service. Excellent references. PW-1896, Engineering News-Record.

ACCOUNTING, BOOKKEEPING, payroll and tax service. Weekly, monthly, special assignments. Metropolitan area. PW-1887, Engineering News-Record.

PRESSURE GROUTING SUPT. Available with experience men. Or will train your crew. PW-1816, Engineering News-Record.

CIVIL ENGINEER —. Executive. Registered P.E., N.Y. Thirty-five years broad experience, about twenty of which in responsible charge field and office on highways, municipay and general construction in Latin America and Far East. Fluent Spanish. Excellent credentials. Available for foreign assignment. Thuman, P.O. Box 126, Merrit Island, Fla.

PROJECT MANAGER. Graduate C.E. Architect's Representative. Field and Resident Engineer. New York-Philadelphia desired. Available Jan. 31st. PW-1930, Engineering News-Record.

CHIEF OF Party. 17 years experience in highway and heavy construction. Now available. Excellent references. PW-2024, Engineering News-Record.

SANITARY ENGINEER

Illinois and Indiana registration. Complete knowledge of business management, industrial waste and water surveys, design of water treatment and waste treatment plants; supervision of construction. Have vast knowledge regarding utilities operations and problems and have at present a large volume of national and international business contacts. Address replies to

PW-2016, Engineering News-Record
520 N. Michigan Ave., Chicago 11, Ill.

POSITIONS WANTED

OWNER'S REPRESENTATIVE. Guarantee contractor's complete compliance with owner's requirements. Over 15 years' experience; including construction superintendent with reputable contractors and major industries. PW-1894, Engineering News-Record.

GRADUATE ENGINEER, 22, construction and machine shop experience. Desires opportunity to get experience in related field. Will relocate. Salary secondary. PW-2014, Engineering News-Record.

WANTED—POSITION AS structural designer by engineer licensed in North Carolina. Seven years experience on buildings and other structures. PW-2061, Engineering News-Record.

STRUCT. DESIGNER—Draftsman; steel, reinforced concrete. Influence Diagr., Static. indetermin. systems, European graduate, 2 years U.S.A. experience, moderate wages. PW-2081, Engineering News-Record.

FIELD OFFICE Manager, job accountant—8½ years heavy construction and industrial machinery installation. Available immediately. References on request. Will relocate. PW-2042, Engineering News-Record.

CONSTRUCTION SUPERINDENDENT, 20 years experience with heavy construction; foundations, industrial buildings, piping, etc. Best references. 42 years old. Available after January 1, 1950. PW-2019, Engineering News-Record.

EXPEDITER AND/or Scheduling Engineer. Over 15 years diversified experience; Industrial, Commercial, Governmental, and Institutional expansion programs. Guarantee satisfactory service and excellent past record. PW-2071, Engineering News-Record.

GRAD. C.E., yg. single, 4 yrs. drafting and design, 9 mos. Power Plant construction exp.; desires construction or design position. Will relocate. PW-2087, Engineering News-Record.

SELLING OPPORTUNITY WANTED

MINNEAPOLIS-ST. PAUL and five state area; 15 years experience in design, site supervision, and technical sales. Minnesota registration. Prefer technical building products SA-1981, Engineering News-Record.

SALES ENGINEER. Over 17 years diversified engineering experience, including management of construction for Commercial, Industrial, and Governmental work. Prefer sales. Guarantee excellent past record and future results. SA-2072, Engineering News-Record.

BUSINESS OPPORTUNITY

All or part
of specialized contracting business operating throughout United States, past earnings from $25,000.00 to $75,000.00 yearly. Attractive proposition to capable construction man with financial responsibility. BO-1986, Engineering News-Record.

WELL EXPERIENCED
INDUSTRIAL CONSTRUCTION
SUPERINTENDENT

Can estimate and knows office procedure, wishes to associate with a going construction business and invest as part owner. Permanent residence required. 47 years of age.

BO-2077, Engineering News-Record
520 N. Michigan Ave., Chicago 11, Ill.

"WE HAVE FED MILLIONS"

30 Years Experience in the
HOUSING and FEEDING of MEN

Valentine B. Kane & Assoc.
1410 State St. New Haven 11, Ct.

FOR SALE

One 6 cylinder MacIntosh-Seymour (now American Locomotive Co.) Diesel Engine, Serial #2035, Model 6-C-46, 4-cycle, 1250 H.P. at 164 R.P.M., direct connected to G. E. 2300 Volt, A.C., 3-phase, 60-cycle 1040 K.V.A. generator and G.E. direct connected exciter complete with generator field rheostat, exciter field rheostat, lube oil pump and motor, and complete with necessary watthour, ampere, voltage, power factor meters and necessary current and potential transformers.

May be inspected in operation at Municipal Generating Station, Rockville, Centre, N. Y., anytime prior to February 10, 1950. Will be sold "as is—where is". purchaser to remove prior to March 15, 1950.

Offers will be received to 2:00 P. M. February 10, 1950, by the **Commissioner of Public Utilities, Rockville Centre, N. Y.** Write for further information.

FOR SALE—ROCK BITS

IR Type 1—1½", 1⅞", 2⅛", 2¼" and 2⅝"
IR Type—2—1¾"
Timken Type "H"—1¾" and 2⅛"
All center hole, four point.

Offered at less than manufacturers selling price.

FS-1533, Engineering News-Record
330 West 42nd St., New York 18, N. Y.

FOR SALE

1946 NORTHWEST Backhoe

Model 25—¾ Cu. Yd. Diesel
Excellent Condition
Price—$10,000.00
CIRCLE CONSTRUCTION CORP.
1 Virginia Road White Plains, N. Y.
Tel. WHite Plains 9-9000

BARGAIN
LATE 1947 MODEL E

QUICKWAY TRUCK CRANE

With Fairleads and Bucket; mounted on Autocar Truck; cost new over $13,000. Sacrifice $5500.

GARSON
Box 86, Norfolk, Va., Phone: 27570.

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Approximately 45,000 sq. ft., various sizes, UNIVERSAL FORM PANELS; reasonably priced.

Corbetta Construction Co., Inc.
220 East 42nd St., New York 17, N. Y.

WANTED

WANTED

DRAGLINE BOOM AND EQUIPMENT COMPLETE FOR NORTH WEST 80D.

GRANNIS AND SLOAN INC.
Fayetteville, N. Carolina

WANTED
One 4 or 5 cu.yd.

MODERN ELECTRIC SHOVEL

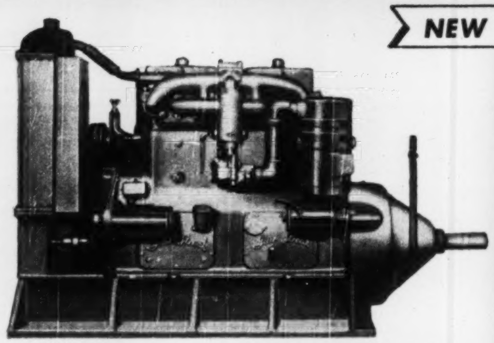
W-2074, Engineering News-Record
520 N. Michigan Ave., Chicago 11, Ill.

WANTED
Two 25-30 ton used gas or Diesel

LOCOMOTIVE CRANES.

Give full particulars.

GUY H. RUMPF MACHINERY & EQUIPMENT CO.
Railway Exchange Bldg., ST. LOUIS 1, MO.



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A $3,400.00 current market value item, available in limited quantities at a reduction of more than 50%

NEW 100 H.P. CLIMAX ENGINE

BOXED FOR EXPORT

The Climax valve-in-head Blue Streak Engine Model N4B is a 4-cylinder, 4-cycle gasoline engine which develops 100 hp. at 1200 r.p.m. An extremely dependable and flexible prime mover and like all Climax Engines is a rugged, heavy duty unit built to stand up under the most grueling industrial and field conditions.

Convertible to natural or manufactured gases.

COMPLETE WITH ACCESSORIES
ONLY $1,650 F.O.B. BLOOMINGTON, IND.

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★ JOBBERS ★ WHOLESALERS ★ EXPORTERS ★

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At Lower Prices
Top Quality—Immediate Delivery
12" widths to 36" (All plies)
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Also Mill Remnants
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1287 Hollywood Ave. Memphis, Tenn.

ELWELL PARKER INDUSTRIAL LOW LIFT TRUCKS

Type GEP 6, Gasoline driven, serial numbers 14-405, 14-408, 14-409, 6000# capacity, lift 5¾", platform 26½" x 54". Good condition, new in 1942, government stored since 1945, $1,000.00 each, F O B Rochester, N. Y.

Rochester Iron & Metal Co.
Warehouse Div'n P. O. Box 565, Locust 9510

FOR SALE
1—1½ Cu. Yd. Amsco Shovel bucket, new, complete with teeth and sheave for P & H Shovel. Price $1450.00
Phone Williams 1-8600
Hillsgrove, Rhode Island

FOR SALE
Airfield Steel Landing Mats
Interlocking Type
FOR CONTRACTORS USE
3200 Pieces
⅛"x15½"x120"
Weight per unit 65#
Sold in separate units or total lot
Prompt Shipment
CIMCO 2432 West Third St.
Cleveland 13, Ohio

FOR SALE—NEW PROPELLING and CROWD CHAINS
For All Makes of Shovels And Cranes
From ½" to 5" Pitch
SUBSTANTIAL DISCOUNTS
"Thousands of other Construction Items"
BABCOCK EQUIPMENT CO., INC.
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HYDRAULIC JACKS
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ILLUSTRATED CATALOG **60% off**
BERKELEY DISTRIBUTORS INC.
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FOR SALE

LINK BELT K-55 2 YARD CRAWLER CRANE, excellent condition, 1948 Buda diesel engine, 60' boom and fair lead, f.o.b. Miami, Florida, $15,000.00.

P&H 255-A TRUCK CRANE, 80' boom, mounted on 10 wheel truck, 18 ton capacity, excellent condition, $10,000.00 f.o.b. Miami, Florida.

MODEL 307 GENERAL TRUCK CRANE, 18 ton capacity, mounted on 10 wheel 6 cylinder BQ Mack, air brakes, 90' main boom, excellent condition, $9,000.00 f.o.b. New York City.

KARL KOCH
362 Casanova Street, Bronx 59, N. Y.
DAyton 9-7474

When the job gets going

YOU'LL BE GLAD YOU BOUGHT

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"*The Distributor with* Rebuilding Know-How"

JAEGER 11-S end discharge **Concrete Mixer.** Complete with tank, power skip, 4 cyl. Wisconsin air-cooled gas engine. Mounted on 2 pneu. tired wheels. New in 1946. Condition—Excellent.

JAEGER 7S end discharge **Concrete Mixer.** Complete with tank, skip, powered by 4 cyl. Hercules gas engine. Mounted on 2 pneu. tired wheels. In excellent condition.

REX No. 6 PLASTER MIXER, powered with 4 H.P. single cylinder gas engine. Mounted on 2 pneu. tired wheels. New in 1947. Good condition.

LORAIN MODEL 40 CRANE, 30 ft. boom, powered by 6 cyl. WAUKESHA model ML gas engine. Mounted on 10 wheel Mack Truck. In operating condition.

LORAIN MODEL TL-20 CRAWLER, WAUKESHA gas engine, 30 ft. boom, 10 ft. and 5 ft. center sections, clamshell equipment, lifting crane equipment, dragline fairleads. New in 1948 and in excellent condition.

LORAIN MODEL 0 CRAWLER, powered with WAUKESHA gas engine with elec. starter, pads 21″ wide, 40 ft. boom with tagline, shovel front and HAYWARD rehandling clamshell bucket. In operating condition.

• BUY OF THE MONTH •

MANITOWOC
Model 2000
1¼ yd. crawler
Mounted **SHOVEL**
with lagging. Powered
by G. M. DIESEL
engine with air
control.
Built in 1948
In Good Condition

AURORA, 2 stage self-priming **JET PUMP,** 300 g.p.m. 125 lb. 4″ suction, 3″ discharge. With 35 H.P. BUDA ENGINE. 4 steel wheels. Good condition.

BUCYRUS-ERIE Model TD-9 **DOZER SHOVEL.** Built in 1946. In very good condition.

CASE Model D-I **TRACTOR,** elec. starter and lights, HOUGH ⅝ yd. bucket, Late model but without hydraulic control. Backfiller blade and crane hook. New in 1947.

CLETRAC MODEL HG-42 and hydraulic lift snow plow. Gar Wood rear cable winch. In good condition.

INTERNATIONAL - HARVESTER MODEL I-4, heavy duty, front axle with spring, elec. starter, muffler, 1 set rear wheel weights. Tires, front: 8 ply 6.00 x 20, rear: 6 ply 12.00 x 24. TROJAN bulldozer, 1948 model. Good condition.

INTERNATIONAL - HARVESTER MODEL TD-18 CRAWLER TRACTOR with hydraulic bulldozer. 74″ tread, 20″ shoes. New in 1948. Completely reconditioned.

INTERNATIONAL - HARVESTER, Model TD-14, 56″ tread, no starter. Street plates, canopy and B-E bulldozer. In operating condition.

INTERNATIONAL - HARVESTER, Model TD-9, with standard attachments, starter, front pull hook, 44″ tread, 16″ shoes and B-E hydraulic bulldozer. 1947 manufacturer. Good condition.

INTERNATIONAL - HARVESTER, Model TD-6 TRACTOR, 50″ tread, 16″ TRACK SHOES standard attachments, B-E hydraulic bulldozer. 1948. In good condition.

JAEGER, 4 yard TRUCK MIXERS with water tank, HERCULES ENGINE, rear operating controls, 2 speed transmission, electric starter. 3 in stock. Recently reconditioned.

EXPORT SERVICE **SUBJECT TO PRIOR SALE** **IMMEDIATE DELIVERY**

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5 Highway Double Drum Winches with two Way Power Take Off Installed

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5 Booms, T Type or Tri-Pod

PRICE FOR EACH UNIT . . $5,750

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1—No. 56 Pioneer portable crushing plant powered by two D17000 Caterpillar Diesels equipped with 30-inch x 42-inch primary crusher, 24-inch x 54-inch roll crusher and with 40-inch x 12-foot traveling grizzly.

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All in good working condition, equipped with LeTourneau equipment.

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1—Hough Loader, 1948, Model HL-A Serial #3915
3—1945 Mack 9-ton dump truck complete, Model EHX 120 equipped with 1100-20 tires
1—3-wheel Buffalo Springfield Roller, 6-8 tons.

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FOR SALE

1—2-½ cubic yard ESCO Rock Dipper Serial 5077 with dogleg bail, $2,100.00 Great Falls, Montana

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1—14-S Rex Concrete Mixer Serial H-9172, powered by LeRoi Motor Serial 60389, steel wheel mounted, $800.00. Great Falls, Montana

1—2 cubic yard Lima Shovel, Amsco Bucket, 50 foot dragline boom with 10 foot insert, $17,500.00. Great Falls, Montana

1—D-8 Tractor Serial 1H-5231 with LeTourneau Power Control Unit Serial P67561-R8C, $4,700.00. Newcastle, Wyoming

1—D-8 Tractor Serial 1H-8892SP with LeTourneau Power Control Unit Serial P1890H-R8C, $4,700.00. Newcastle, Wyoming

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Phone 3286

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AMERICAN R-25 WHIRLEY CRANE

50 Ton Capacity

100' boom; 5' whip extension; 38' height from top of rail to boom hinge pin; 30' track gauge.

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WHIRLEY CRANE

Colby Model 200 Electric Powered Whirley Crane 45 Ton at 30 Foot Radius. Spare Parts. Excellent condition.

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1—Euclid Loader, Model BV-3, 54" Loading belt, year 1947. Asking $12,000.
6—Euclid bottom dump 13 c.y. 190 HP, GMC motor, year 1947 Asking $9,500 each.
4—Super "C" Tournapulls with LP Scrapers, 15 c.y. Serial C3T4300 to 3T5200. Asking $6,800 each.
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All this equipment in A-1 condition.
Rubber practically new.

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1—¾ yd. Marion Steam Shovel
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1—30 McMyler Steam Locomotive Crane
1—P & H Truck Crane BARGAIN
1—¾ yd. Lorain Backhoe & Crane
1—½ yd. Link Belt Backhoe
1—25 Northwest Dragline
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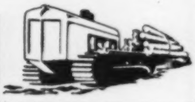

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LINK BELT K-55 2 YARD CRAWLER CRANE, excellent condition, 1948 Buda diesel engine, 60' boom and fair lead, f.o.b. Miami, Florida. $15,000.00.

P&H 255-A TRUCK CRANE, 80' boom, mounted on 10 wheel truck, 18 ton capacity, excellent condition, f.o.b. Miami, Florida. $10,000.00.

MODEL 307 GENERAL TRUCK CRANE, 18 ton capacity mounted on 10 wheel 6 cylinder BQ Mack, air brakes, 90' main boom, excellent condition, f.o.b. New York City. $9,000.00.

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15 ton steel stiffleg derrick.
35' mast; 85' boom; 18' 6" extension.
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FORT SMITH ARKANSAS

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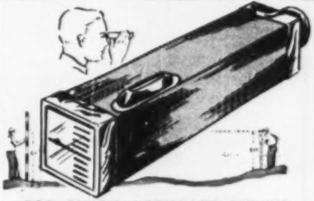

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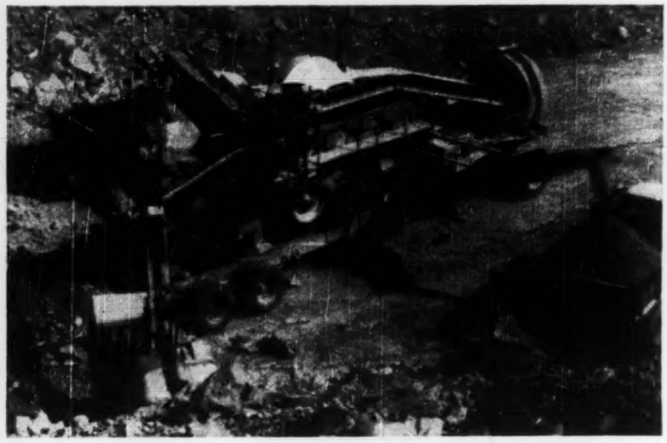
NEW PRODUCTS



Double-Duty Plant Does Work of Two Single Crushing Units

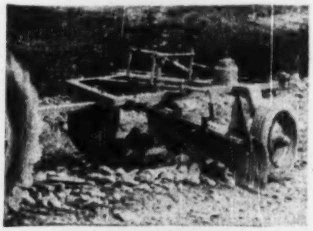
Rock-It crushing and screening plant is a double-duty plant that will replace two single units. Designed specifically for aglime, chip, and roadstone, the Rock-It produces crushed stone or aglime, or a percentage of both, in one operation. Capacities range from 60 to 80 tons per hour. Charging hopper and delivery conveyors are the only parts that have to be removed to meet highway-transportation requirements. Features include: Accurate gradation of finished product, centralized controls, low feeding height for shovel feed, and anti-friction construction throughout. The Cedarapids Rock-It consists of a 24-in. x 8-ft. apron-type feeder and charging hopper with grizzly; a newly designed roller-bearing jaw crusher with 18 x 24-in. jaw opening and jaws of standard thickness; a 42-in. x 10-ft. horizontal vibrating aglime screen; a Cedarapids hammermill, either 3033 or 2033; and a Cedarapids return wheel system of Monorail design. A 3018 roll may be used in place of the hammermill; a 2025 primary crusher in place of the 1824. — IOWA MFG. CO., CEDAR RAPIDS, IOWA.

Fire-Quenching Foam

Mechanically formed air bubbles produce a heavy foam recommended for quenching fires involving gasoline, benzol, naptha, and other flammable liquids. Aer-O-Foam liquid when mixed 6 percent by volume with water and aerated forms a homogeneous, tenacious foam blanket capable of flowing around obstacles and quickly quenching fires. (This system is not to be confused with chemical foams produced by carbon dioxide.) System consists of a small foam-injection pump which takes suction from a foam-liquid storage tank, and can be used in sprinkler systems. Foam formed is dissipated within a few hours by dehydration.—"AUTOMATIC" SPRINKLER CORP. OF AMERICA, BRITTAIN ST., YOUNGSTOWN, OHIO.

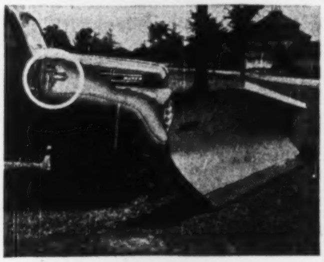
Carburetor-Cleaning Kit

Cleaning of internal parts of carburetors, without dismantling, is made possible by the Gumouter. Cleaning of all functional surfaces—venturi, jets, and needle valve—is effectively accomplished. To use the Gumouter, the fuel line is detached at the fuel filter or carburetor fuel intake. The fuel line is then capped or plugged with a five-way combination fitting which serves the majority of requirements. Gumouter permits a 50-50 solution of Gumout and gasoline to be gravity fed through carburetor while engine is running. Solvent cleaning action of Gumout is said to dissolve and remove all gasoline gums, varnish, and lacquer upon contact.—PENNSYIVANIA REFINING CO., GUMOUT DIVISION, 2686 LISBON ROAD, CLEVELAND 4, OHIO.



Drawn, Rake Attachment

Drawn by truck, tractor, or grader, the York rake attachment screens and distributes windrows left by grader blades, shunting larger stones and other material to the side of the road, leaving a smooth driving surface. The rake has 51 teeth ($\frac{5}{16}$x1$\frac{1}{4}$x28 in.) on the long head and 15 on the short head; lift is hydraulically powered; the pole hitch is adjustable in height. Dimensions: Weight, 1,160 lb; overall length, 15 ft. 4 in.; working width, with rear section of rake extended, 9 ft. 4 in.; tread of wheels, 6 ft. 3 in.; and size of tires, 6:00x16, 4 ply.—YORK MODERN CORP., DEPT. G, UNADILLA, N. Y.



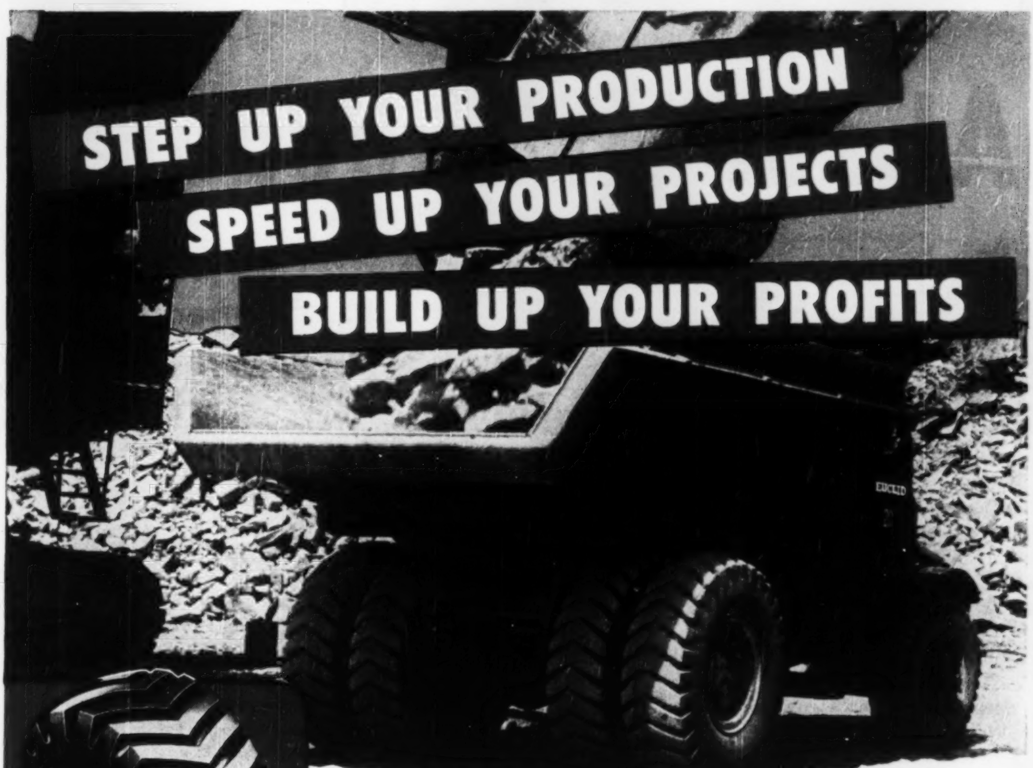
Truck-Mounted Snow Plow

V-type blade snow plow is especially designed for breaking through deep snow and widening high drifts. It has all-welded construction, alloy-steel moldboards for increased strength and reduced weight, and smooth-rolled moldboards for fast discharge and minimum resistance. It is made in V, one-way rigid, one-way trip and reversible models for all trucks from $\frac{1}{2}$ to 5-ton capacity.—JARP CORP., WAUSAU, WIS.

Extruded Plastic Pipe

Physical characteristics of Carlon EF extruded plastic pipe include a tensile strength of 1,400 psi, negli-

(*Continued on page 92*)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with

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WHEN you're racing against time, there's nothing more costly than tire trouble. When tires go down, costs go up — and fast! There are just two means of relieving these tire headaches: one is through better tires, and the other is through better tire service. Firestone offers both.

Firestone tires are precisely engineered, both in body construction and in tread pattern, for your job. The cut-resistant treads are extra thick and extra tough. The bodies, armored by four "punch-protector" plies and double-thick sidewalls, are made of heavy, high-tensile, low-stretch, Gum-Dipped cords.

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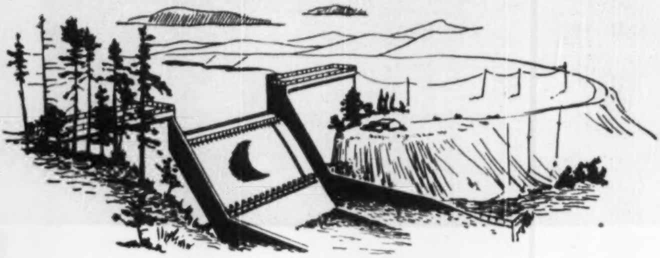
Ahead of Schedule



with equipment that's ahead in performance

DORENA DAM, Oregon, begun in May, 1947, was considered a big 3½-year project. Good organization* plus job-steady "Cat" DW10s were two important reasons why completion time was shortened by almost 12 months.

Ten DW10 Tractors with No. 10 Scrapers spearheaded the "Caterpillar" fleet. Extended sides on the Scrapers enabled each to carry 11 borrow-pit yards. Averaging about 6 trips each on hauls over 4000 feet . . . including 1500 feet of adverse grade to crest of dam . . . these units moved some 570 cubic yards per hour—for a total of about 10,250 yards per 18-hour day. Two D8s served as pushing units in the pits . . . loading time less than a minute. Four additional DW10s worked on the fill, equipped with 'dozers and pneumatic-tired tampers.

These records tell a story of speed, volume—and owner-operator satisfaction. Project Manager A. H. Steiner says: "These units are unbeatable. Among their biggest features are their easy loading and ease of operation. Our boys work 9 hours a day and hardly know when lunch hour comes around."

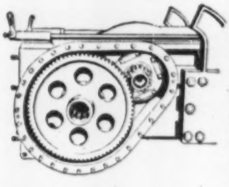
Profit-making speed and volume, little or no interrupting down time over long periods of operation, complete satisfaction—are the "end results" "Caterpillar" owners expect and invariably *get*.

CATERPILLAR TRACTOR CO. • PEORIA, ILLINOIS

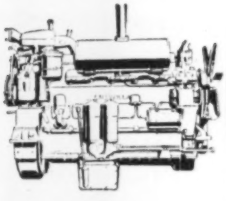
** Under the name of The Dorena Construction Co., this project was put through with the co-ordinated facilities of: G. F. Atkinson Co., Bressi & Bevanda Construction, Inc., W. E. Kier Construction Co., and A. Teichert & Son, Inc.*

Look under the hide

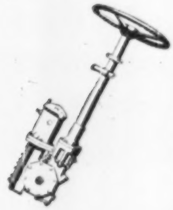
OF THE "CAT" DW10



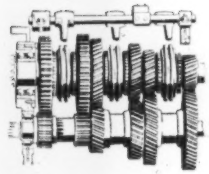
SPEEDS UP TO 24.5 MPH. Three complete ranges of speed are available with a choice of final drive gears. Many operators keep all three sets in stock to fit their DW10s to the job, ground conditions or haul distances. Differential-type rear end, combined with steering brakes, enables the DW10 to "walk" through soft spots on the fill. Full-floating drive axles are an assurance of dependable performance under the roughest of conditions.



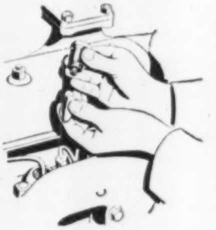
ALL-"CATERPILLAR" BUILT. Undivided manufacturer responsibility! Engine, transmission, clutch and final drive—all are 100% "Caterpillar" built and designed for each other. The engine, 115 honest horsepower, is known the world over for its dependable and economical performance. Its own independent gasoline starting engine is itself started electrically, or can be started by hand in case of battery failure. The engine is the heart of your operations . . . use the best.



EASY SAFE OPERATION. One way to get high earthmoving production is to design equipment for safety and ease of operation. Four-wheel stability; hydraulic booster steering; selective-acting air brakes on the DW10 and trailed unit; hydraulically controlled spring-mounted seat and unexcelled visibility—these add up to all-important reasons why operators prefer DW10s.



QUALITY BUILT. Typical of the quality designed into the DW10 is the constant-mesh, easy-to-shift transmission. A gear-type pump forces oil over the upper shaft to lubricate effectively the transmission on any grade. To insure long life, a large replaceable filter element guards against destructive abrasive materials. Just one of the many features that can boost production for you.



EASY TO MAINTAIN. "Caterpillar" has always designed for ease of service. Fuel injection equipment that can be replaced like spark plugs, with no adjustments required; a metallic-lined double-disc flywheel clutch that can be removed without disturbing engine or transmission—these are just two of many reasons why owners report full satisfaction. Hundreds of well-equipped "Caterpillar" dealers, each within easy job distance, constitute another reason why DW10s boost hauling profits.

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Please send me your latest booklet, "The 'Caterpillar' Diesel DW10 in Action."

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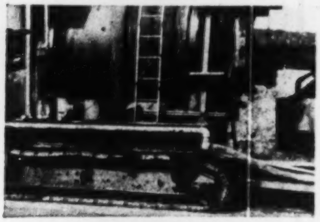
gible water absorption, slow burning rate, dielectric strength of 500 v./mil ($\frac{1}{8}$-in. thickness), and flexural strength ranging from 1,500 to 1,700 psi. A 25-ft. length of 6-in. pipe weighs about 55 lb. Carlon EF can be curved to follow ditch line or surface contour without damage to pipe. Elasticity of the pipe exceeds the percentage of expansion of freezing water.—CARTER PRODUCTS CORP., 10153 MEECH AVE., CLEVELAND 5, OHIO.



Rubber Boots for Crawlers

Process for vulcanizing resilient rubber to steel plates permits movement of crawler equipment over finished concrete, when these rubberized plates are bolted to the crawler pads. Metalweld uses Goodrich Vulcalock bonding process in the rubber-lining work. Rubber and steel are joined together with a bond strength of over 500 psi.—METALWELD, INC., 26TH & HUNTING PARK AVE., PHILA., 29, PA.

Low Head Crane Block

Available in capacities from 10 to 50 tons, the new Lo-Head crane block can be used for all types of hook work. The new block, with its shorter overall length, permits $1\frac{1}{2}$ to 2-ft. higher lifts without lengthening the boom. The forged hook operates on Timken-tapered roller bearings and the cast-steel sheaves are equipped with Hyatt Hi-Load bearings. Lubrication is necessary only once each 2,000 hr.—AMERICAN HOIST & DERRICK CO., ST. PAUL 1, MINN.

Workhorse ON TOUGH DIGGING JOBS

ESCO Standard 2½-yard dragline bucket on No. 54B machine excavating footings for McNary Dam on the Columbia river in Washington.

Balance for smooth carrying...*control* for accurate spotting . . . *design* for quick dumping...*rugged construction* for absorbing the punishment of tough going—these are the qualities of *ESCO* dragline buckets that have made them the accepted workhorses on the most productive digging teams.

These buckets frequently are oversize for their machines. They give more passes an hour, and more payload with every pass. Here's why:

Lighter weight with wear resisting manganese steel and hollow arch construction.

Streamlined cutting lip with flaring outside teeth gives clean, full bite and lower resistance.

No excess weight, but extra strength where it is needed.

To meet the requirements of every digging job, *ESCO* dragline buckets are made in four types—medium, stripping, standard and heavy duty; sizes range from 3/8 yard to 20 yards. It will pay you to let us give you detailed information about these buckets. See your nearest *ESCO* representative, or use the coupon.

ESCO DRAGLINE AND DIPPER BUCKETS

ELECTRIC STEEL FOUNDRY

2167 N. W. 25th Avenue, Portland 10, OREGON

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Please forward information on ESCO dragline buckets of following types: ☐ Medium, ☐ Stripping, ☐ Standard, ☐ Heavy Duty.

Name____________________

Address________________Zone______

City________________State______

Make, model and boom length of machines used________

MANUFACTURERS' PUBLICATIONS

Properties of Ponderosa Pine—Architectural, structural, and design uses for Ponderosa Pine are featured in 72-p. catalog. The various uses for this wood are illustrated by photographs of actual installations. Text describes its features.—Western Pine Association, Dept. PD, 510 Yeon Bldg., Portland 4, Oreg.

Condensate Drainage Control—Twenty-four-page publication on the Cochrane C-B system of condensate drainage control discusses this system of high-pressure high-temperature condensate return, followed by specifications of two type of C-B units. Survey form included has provision for sketch as well as details of condensate removal problems. Complete details on several typical installations are included in Publication No. 3250.—Cochrane Corp., 17th & Allegheny Ave., Philadelphia 32, Pa.

Rolling Doors—Wide variety of rolling doors and steel grilles is described in a new catalog. The Cornell line includes rolling sliding steel grilles, moving stairway enclosures, side-rolling partitions, and special upward acting doors.—Cornell Iron Works, Inc., 36th Ave., & 13th St., Long Island City 6, N. Y.

Preformed Wire Rope—Stainless-steel and monel-metal corrosion-resistant wire ropes are described in 4-p. folder. This bulletin contains tabulated data listing diameter in inches and breaking strength in pounds of several standard sizes of wire rope. It also explains what the various symbols used in classifying wire rope stand for; how to measure wire rope; and other miscellaneous data.—Macwhyte Co., Kenosha, Wis., 2930 Fourteenth Ave., Kenosha, Wis.

Protective Coatings—Latest advances in coatings based on Bakelite and Vinylite resins are described in Bulletin G-16-a. These are formulated for use with cement-asbestos shingles; concrete, fresh plaster, and wallboard; fortification of casein paints; concrete blocks; metal coatings; and others. The bulletin contains a complete description of each product and its method of application.—Bakelite Corp., 300 Madison Ave., New York 17, N. Y.

Hoisting Towers—This 4-pager features a description of the construction and operating advantages of the Beaver hoisting towers. The bulletin lists both heavy and light-duty units. Individual features described in detail are the base sills, cathead, cage, bottom sheave unit, and through-bolt system of construction.—Beaver Art Metal Corp., Ellwood City, Pa.; or, National Distributor, Dravo Corp., National Dept., Dravo Bldg., Pittsburgh, Pa.

Suction and Water Hose Couplings—Bulletin No. 5 describes the complete line of Le-Hi suction and water hose couplings. New items shown for the first time include brass suction and water hose couplings which use a hexagon swivel nut in place of the usual pin lug; petroleum couplings; and fire-hydrant reducer couples.—Hose Accessories Co., Lehigh & 17th St., Philadelphia 32, Pa.

Heavy-Duty Transmissions—Individually designed heavy-duty transmissions for a wide variety of purposes are described in this 8-page catalog. Typical applications for Cotta transmissions, illustrated and described in Catalog WH 642, include on ditchers, travel-mix plants, power drills, street sweepers, concrete-pipe machine, blast-hole drills, pumping units, cranes, snow plows, and others.—Cotta Transmission Corp., Rockford, Ill.

Six-Cylinder Diesels—Two new bulletins contain complete specifications for all automotive and industrial models of the HR-600 and HRS-600 four-cycle 6-cylinder diesels. Each bulletin includes general specifications, a list of standard equipment for each model, and a list of optional equipment.—Cummins Engine Co., Inc., Columbus, Ind.

Materials-Handling Manual — This manual offers 355 ways to cut inventories and to answer hundreds of specific problems encountered by users of materials-handling equipment. Dimensions, load ratings, and code numbers of all the Aerol products are tabulated for quick and easy references. Compensation tables, conversion charts, and cross references have been completely eliminated.—Aerol Co., Inc., 2820 Ontario St., Burbank, Calif.

Aluminum Ladders — Alco-Lite aluminum ladders for industry are described in this 12-p. folder. Illustrated and described in this folder are folding step, warehouse, and straight ladders. Weight of each of these ladders is listed in the table of specifications.—Aluminum Ladder Co., Worthington, Pa.

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Move more yardage today
with the Scraper of tomorrow!

WOOLDRIDGE Model TC-142

14.2 cu. yds. struck, 17.5 cu. yds. heaped

BETTER!

PROVED!

PROFITS!

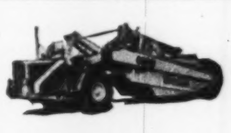
Even faster loading is achieved by instant penetration of new 3-piece cutting edge. WIDER 65-inch apron opening and new curved ejector allow faster complete discharge of load. The rugged new TC-142 is built to "take" the heavier stresses imposed by today's more powerful tractors. Modern formed steel construction minimizes welding, increases structural strength. Higher yoke and ground clearance make maneuvering easy.

Proved Wooldridge advantages have been maintained. Original boiling bowl loading permits heaping volumes to surge freely into bowl. Pivot-tilt forced ejection dumps load faster with less cable strain. Rear-draft fulcrum leverage insures positive blade penetration. Cable is easily accessible, simply reeved over minimum of sheaves, all located away from load.

Job-proved, clean-lined, this IS the scraper of tomorrow—for greater production—for minimum operating cost—for highest profits TODAY! Contact your dealer or write for Bulletin TC-202 now for details. Other Wooldridge Scrapers from 7.5 to 27.5 cu. yd. heaped capacities.

WOOLDRIDGE MANUFACTURING CO.
Sunnyvale, California, U. S. A.

WOOLDRIDGE EARTH MOVING EQUIPMENT



TERRA COBRA high-speed self-propelled earthmovers 14.0 cu. yds. struck. 17.5 heaped.

RIPPERS
BULLDOZERS
POWER CONTROL UNITS

PROVED AND APPROVED FOR EVERY TYPE OF EARTH-MOVING JOB

PERSPECTIVE . . .

It's bigger than you think

Federal commitments and authorizations for future public works run to much larger figures than any ordinary citizen has reason to suspect. Exclusive of military works that Congress may elect to build, the total of civil projects already approved by public law amounts to $25 billion.

Against this backlog of future work, President Truman has asked Congress to approve spending of $3 billion in fiscal 1951. In addition, his budget message requested legislation and $150 million in money to start $1.1 billion of new projects that year.

Should Congress grant his 1951 construction request in full, there would still be remaining at the end of the year (June 30, 1951) $23 billion of future work that has already been authorized. The $23 billion then remaining would be made up of three parts: $11 billion to complete works now in progress, nearly $1 billion to finish construction started in fiscal '51, and another $11 billion for projects presently authorized but not to be started until after fiscal '51.

These parts are listed with the President's 1951 request in an accompanying table. Altogether, the tabulated future civil works expenditures of the federal government add up to the impressive total of nearly $26 billion. But even that is not all-inclusive.

For example, the table cannot show authorizations that Congress will make at the current session for fiscal 1952 and future years. This Congress will face the responsibility of enacting a new federal-aid highway program to replace the present one that expires with fiscal 1951. Further, the two houses almost certainly will come to an agreement on the omnibus authorization bill—for flood control and rivers and harbors—that got snarled in the Senate at the last session.

At a minimum, those two bills—one for roads and the other for river improvements—will add $2.5 billion to the total of authorized future construction expenditures. Actually, the two measures are more likely to increase the total by at least $4 billion. Other construction programs also may receive authorized increments during the present session.

As shown by the budget table, more than half of the $23 billion presently authorized for expenditure after June 30, 1951, lies in programs of the Army Engineers and the Bureau of Reclamation. Including the $573-million St. Lawrence Seaway and power project—irrepressible perennial that the President again is asking for in fiscal '51—the Corps of Engineers would have more than $9 billion of currently approved work still remaining to be done. The bulk of this future construction by the Army Engineers would be in the relatively new flood control program; not so much remains to be accomplished under the century-old rivers and harbors program of navigation improvements. For the Bureau of Reclamation, the backlog at the end of fiscal '51 would still carry $5.5 billion.

FUTURE FEDERAL EXPENDITURES FOR CIVIL WORKS CONSTRUCTION

(In Billions)

Post-Fiscal '51 for Works Under Way	
Direct Federal Construction	
Engineers	$ 3.7
Reclamation	3.2
Veterans Admin. (hospitals)	.2
Atomic Energy Comm.	.2
Other	1.2
Total	$ 8.5
Loans and Grants	
Public Roads	$ .7
Pub. Health Svc. (hospitals)	.8
HHFA (gross)	.9
Other	.1
Total	$ 2.5
Total, work under way	$11.0
Post-Fiscal '51, for Works Started During Fiscal '51	
Direct Federal Construction	
Engineers (St. Lawrence)	$ .6
Other	.2
Total	$ .8
Loans and Grants	$ .1
Total, continuing work started in fiscal 1951	$ .9
Budgeted for fiscal 1951	$ 3.1
Total, for fiscal 1951 and later years	$15.0
Work Authorized After Fiscal '51	
Engineers	
Flood Control	$ 3.4
Rivers and Harbors	1.4
Reclamation	2.3
Agriculture (Forest Service)	1.5
Public Buildings Service	.4
Veteran Admin. (hospitals)	.3
Civil Aeronautics Admin	.3
TVA	.3
Indian Affairs	.2
Coast Guard	.1
Other	.6
Total auth. for post-fiscal '51	$10.8
Grand Total, civil works	$25.8

Figures presented in the table are rounded for conciseness. Further, the estimates are based on present prices and construction costs. Changes in those costs would necessitate corresponding changes in the estimates.

For those who want more explicit figures, they can be found—so far as continuing programs are concerned—in the "performance budget" submitted to Congress by the President. As to future programs, authorized for starting in later years, the Budget Bureau can supply data in greater detail than the summarizations shown here.

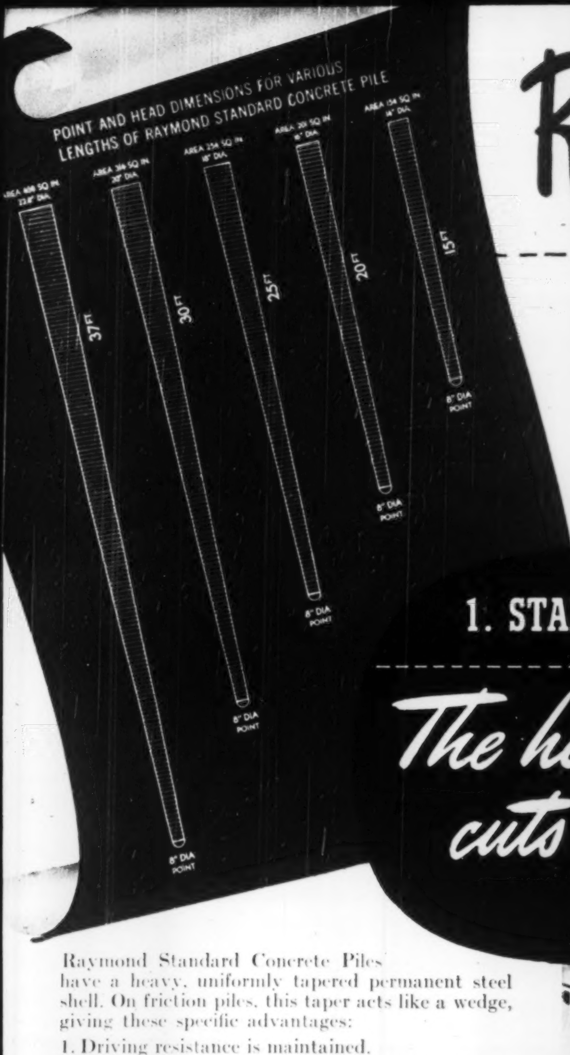
Colossal sums authorized for future construction programs do not in themselves point to waste or extravagance. Quite the reverse is indicated. By authorizing projects far in advance of actual construction, Congress allows time for the long-range planning that is indispensable to economical and effective use of the nation's resources.

Federal legislative machinery is so set up that no agency can make an intensive study of a broad program—or a detailed investigation of a specific project—until Congress has authorized the undertaking. In addition, Congress has to furnish money for special surveys and preliminary plans to form a report.

When a project or program reaches this stage, the reporting agency has to estimate the total cost of the development. If Congress approves the proposed project for future construction, the estimate is added to the works total.

Authorization of a project in this way does not guarantee eventual construction. No ground-breaking can occur until Congress appropriates money specifically for the purpose. Before that happens, great changes inevitably take place in any large-scale program. Other important revisions commonly are made—particularly in a long-term program—after construction is initiated on its first project or projects.

Such changes are inevitable in carrying out a long-range scheme like the current multi-billion-dollar development of the Missouri River Basin. In the table, the $10.8 billion of construction authorized for starting after fiscal 1951 includes several programs that would take 10 to 20 years to complete.


POINT AND HEAD DIMENSIONS FOR VARIOUS LENGTHS OF RAYMOND STANDARD CONCRETE PILE
AREA 408 SQ IN 22.8" DIA
37FT
8" DIA POINT
AREA 314 SQ IN 20" DIA
30FT
8" DIA POINT
AREA 254 SQ IN 18" DIA
25FT
8" DIA POINT
AREA 201 SQ IN 16" DIA
20FT
8" DIA POINT
AREA 154 SQ IN 14" DIA
15FT
8" DIA POINT

Raymond MAKES 5 TYPES OF CONCRETE PILES

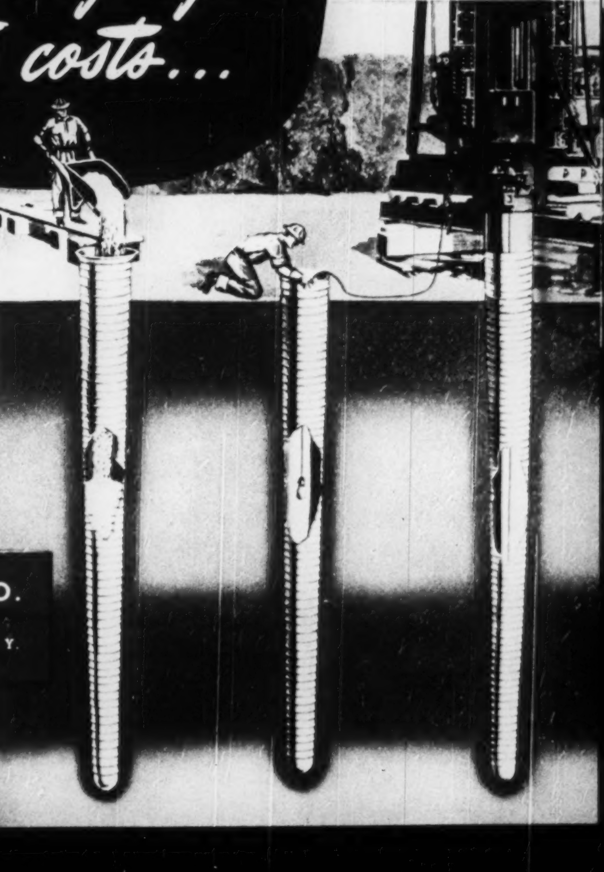
1. STANDARD
2. STEP-TAPER
3. PIPE STEP-TAPER
4. COMPOSITE
5. GOW CAISSONS

Raymond installs every type of pile: cast-in-place concrete, precast concrete, steel pipe, wood and H-beam. Raymond operations include underpinning, borings and soil investigations, waterfront construction and harbor and river improvements.

1. STANDARD PILES

The heavy taper cuts costs...

Note that the permanent steel shell maintains the soil pressure developed during driving and while the concrete is setting, thus insuring a perfect pile free from distortion with a high load capacity.



Raymond Standard Concrete Piles have a heavy, uniformly tapered permanent steel shell. On friction piles, this taper acts like a wedge, giving these specific advantages:

1. Driving resistance is maintained.
2. The load is transmitted to the soil through the entire length of the pile.
3. The load can be carried by shorter piles, because of their greater carrying capacity.
4. Since shorter piles cost less to drive, the taper usually results in substantial savings.

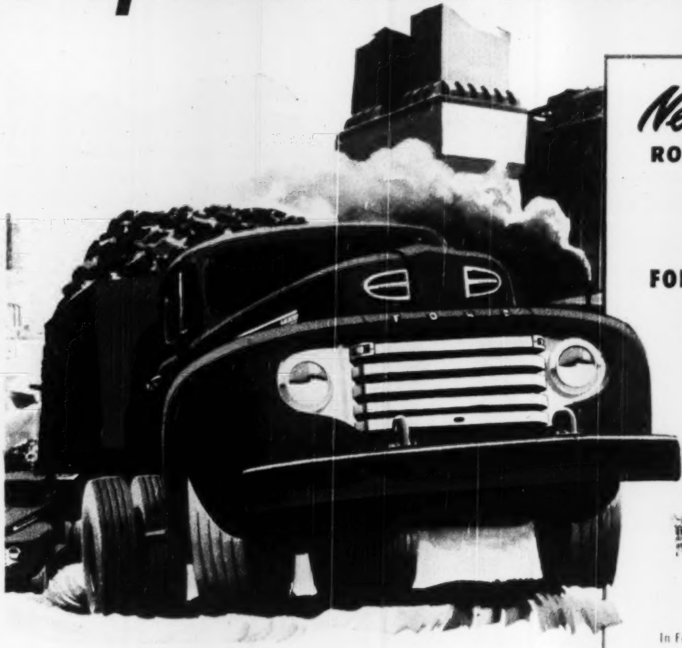
Each of these statements has been tested and proved innumerable times. The evidence is at your disposal at any of our offices. Your inquiry is cordially invited.

Raymond CONCRETE PILE CO.

140 CEDAR ST., NEW YORK 6, N. Y.

BRANCH OFFICES: Boston, Syracuse, Philadelphia, Baltimore, Washington, Pittsburgh, Atlanta, Miami, Houston, Kansas City, St. Louis, Cleveland, Chicago, Detroit, Portland, San Francisco, Oakland, Los Angeles and principal cities in Latin America.

NOW! The most powerful 6-cylinder Ford Truck ever built!



New Ford 110-H.P. engine plus new 4-speed Synchro-Silent transmission make Series F-6 the standout performer in its class!

THE BRAND NEW Rouge 254 Truck Six gives you new power, new performance in the heavy-duty field.

This 254 cu. in. powerhouse gives you the latest engineering ideas. Free-turn, self-cleaning exhaust valves, faced with durable cobalt-chrome alloy. High-lift camshaft for increased valve opening. Chrome-plated top piston ring for longer cylinder wall life.

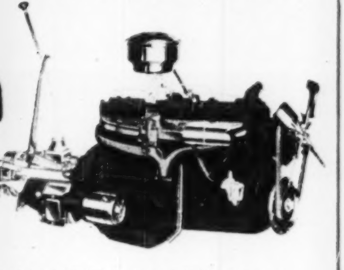
You get these and many other new features in the new "Rouge 254" available in Ford Model F-6. You get power that makes the F-6 the most powerful 6-cylinder Ford Truck ever built. You get the brand new 4-speed Synchro-Silent transmission. You get Bonus* Built construction which means big reserves of strength and power. See your Ford Dealer. Get all the facts about the new "Rouge 254," the fourth in a great line of Ford Truck engines.

***BONUS:** *"Something given in addition to what is usual or strictly due"—Webster*

New ROUGE 254 SIX ENGINE

FOR THE HEAVY DUTY F-6

Thoroughly Proved in Industrial Engine and Motor Coach Operation



In Ford Series F-6 — 110 Horsepower, 212 lbs. ft. Torque
In Ford Series F-6 COE — 106 Horsepower, 210 lbs. ft. Torque

THE NEW FORD 254 ENGINE gives you all these modern design features!

CHROME-PLATED top piston ring for better lubrication, longer cylinder life.

AUTOTHERMIC aluminum alloy pistons with solid skirt. Steel strut controls piston to wall clearance.

HIGH-LIFT camshaft for increased valve opening, greater power.

FREE-TURN exhaust valves. Self-cleaning, better seating, longer-lived.

COBALT-CHROME faced exhaust valves for hard contact surface giving longer wear.

HIGH-TURBULENCE Power Dome combustion chambers for more power, greater economy.

Ford Trucks Cost Less because

FORD TRUCKS LAST LONGER

Using latest registration data on 6,106,000 trucks, life insurance experts prove Ford Trucks last longer!